

# MOTOR AGE

Vol. 3 No. 11

MARCH 12, 1903

Five Cents

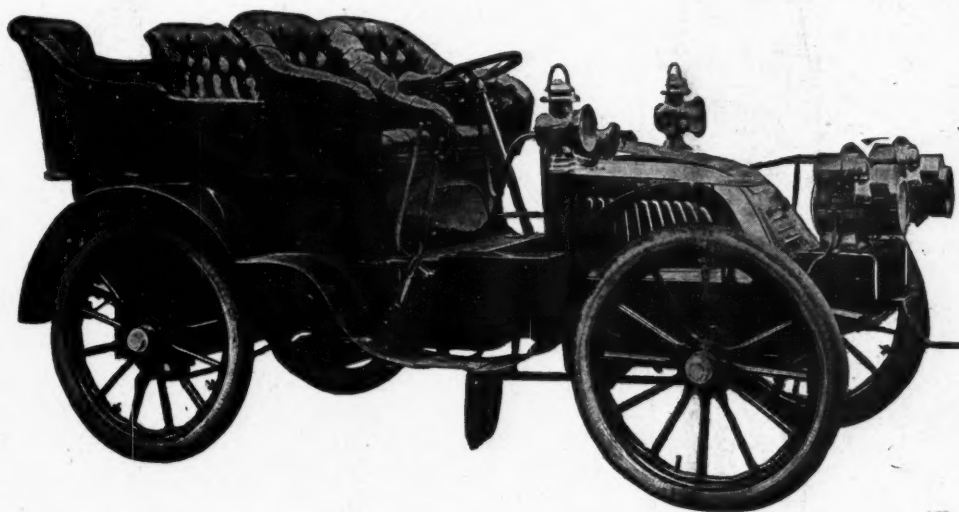
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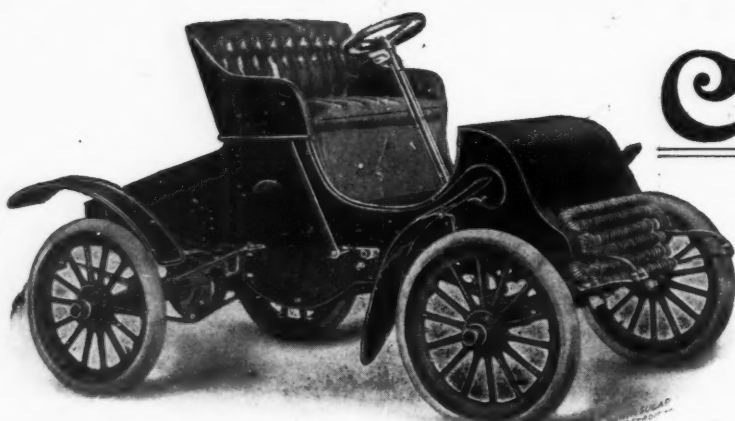
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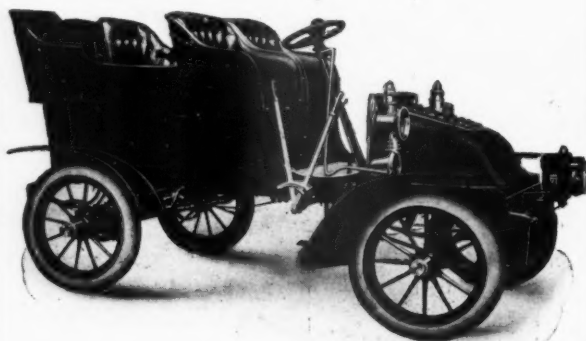
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# MOTOR AGE

VOL. III. NO. 11.

MARCH 12, 1903.

\$2.00 Per Year

## SPRING GARMENTS FOR THE LADY AUTOMOBILIST



VERY sport and every pastime dresses in its own apparel and the devotees of fashion aim almost as closely at dressing in "proper" style for their sports and pastimes as for their parties, receptions, balls and theaters. It is gratifying to note that utility, comfort and common sense are stronger factors in the creation of costumes suited to especial sports and pastimes than they generally are in the conception of styles for conventional occasions.

Thus the pastimes or sports of bicycling, golfing, yachting, etc., have brought into vogue new styles which have been readily accepted for their merit in service as well as for their effect, and some of these styles of clothing have become so well liked as to gain more or less permanence in the market and to be accepted for common wear outside the realms of pleasure for which they were originally made. Many have become standard articles.

The new styles which are following close in the trend of the general introduction of the automobile are proving of that kind. Leaving aside the consideration of clothing made especially for the automobile enthusiast—the amateur sportsman—which are intended solely for fast or long driving and not for ordinary pleasure automobiling, and restricting the conclusion to the new spring garments which have been originated primarily for the use of the woman automobilist under the fair

conditions of ordinary driving, it is readily noticeable that a type of clothes has been produced which is acceptable for both utility and effect.

The designers have evidently striven to create garments which are distinctive enough to characterize themselves from other similar garments not intended essentially for automobiling, but which are still free from any suggestion of freakishness or from the ultra-

indulgence of a desire to go the limit in oddity. They represent common sense garments.

### RELIEF FROM HEAVY FURS

They are not of the most expensive material. They have not the gorgeous appearance of finer garments which are often created for the purposes of strictly fashionable automobiling through strictly fashionable boulevard routes.

They are clever, however, and fetching. They are good without being extravagantly decorated and denote quality without being killed with ornamentation. Above all, they are nobby and able to stand constant usage. They

upon the cool, light, loose and pretty cloth affairs which have come to succeed for a time the somewhat forced and sometimes overdone fur costumes that have been the mainstay of style and individuality in automobiling dress during the winter, especially in France and England.

### LONG COATS PREVAIL

The garments shown in the illustrations are typical of the trend in style for the spring season. The materials are all good and the style of cut is said to be of the most approved. While tight fitting jackets of the full tailored effect will be popular, the majority of the coats displayed are of the three-quarter and full length patterns, and even where full suits are sold the coat is generally long. Mixed grays and small black and white checks prevail, although tans and different plain colors are found in variety. Extremely dark colors are absent, however.

A stylish novelty is the coat in picture 1. It is made of black and white checked men's wear cloth and is 48 inches long. It has belted back, new sleeves and cuffs, both of which are gun metal trimmed. The collar and the front of the coat are faced with white broad-

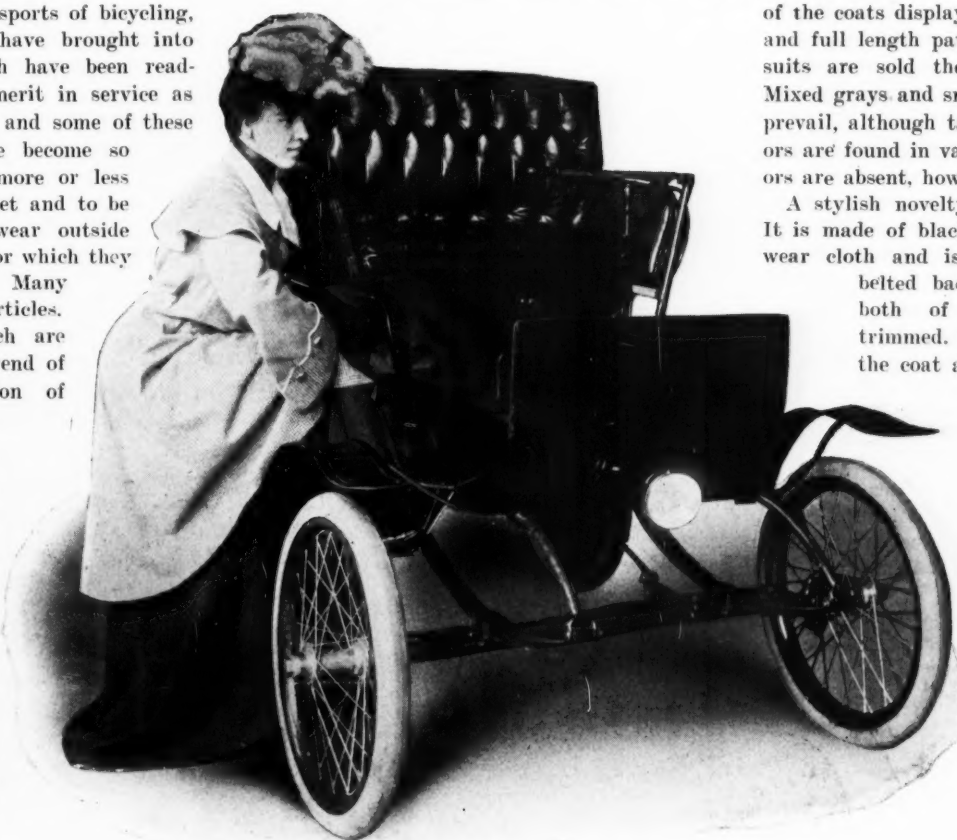
cloth. The cape is of the full five-row military style. The cape, cuffs and belt are white broadcloth piped.

The coat in picture 2 is a clever combination of utility and effectiveness. It is full length to the bottom of the skirt and is made of imported rain proof cravenette. The back is loose but belted. The coat has the new collarless front, with divided triple cape.

The complete suit in the same picture is made of an imported

novelty weave and has a 27-inch top coat. The latter is loose front and back. It is tailor stitched, with inverted, stitched gores. The skirt is made plain with inverted gores and fan bottom.

The full suit shown in picture 3 is a tailored garment of Scotch homespun imported cloth with a full 38-inch length coat. The sleeves and cuffs are of a new pattern. The coat is



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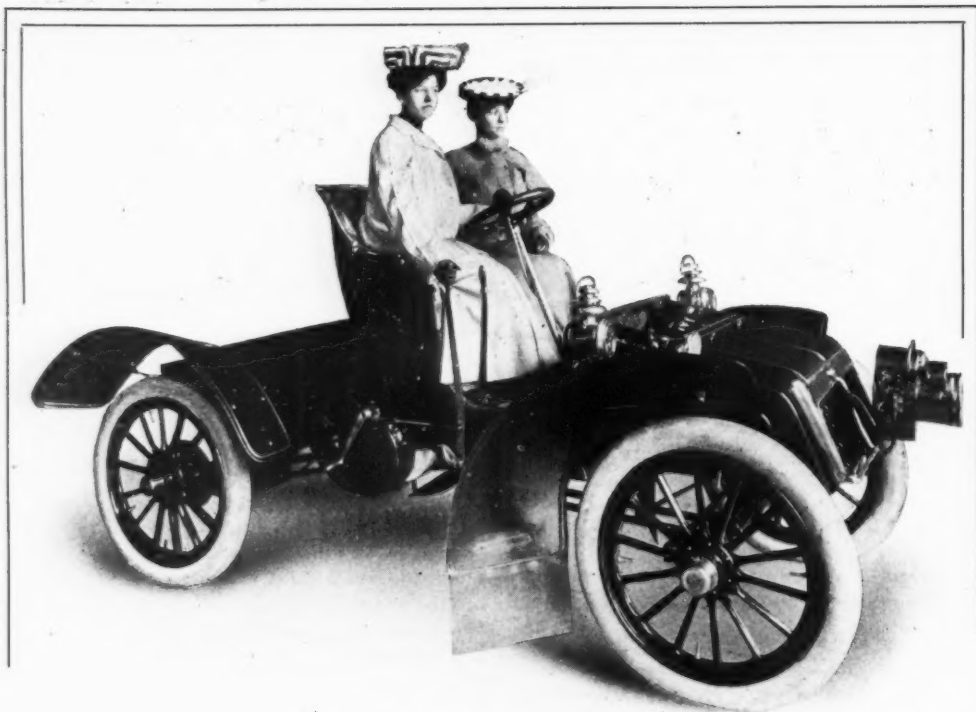
### COSTUMES FOR THE LADY AUTOMOBILIST

are adapted to ordinary automobiling under the general run of conditions, just as the most approved golfing garments are well adapted to the ordinary conditions of the delightful pastime of "Caddie, caddie, go find the ball."

At least the women's automobile coats and suits which are newest in the stores are such, and if nothing else it is gratifying to look

Picture 1





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COSTUMES FOR THE LADY AUTOMOBILIST

Picture 2

belted in the back and has a velvet collar. The skirt is pleated in both the front and back, with gored sides.

The coat shown in the same picture is a 40-inch garment of the swell and swagger variety made of Scotch men's wear fancy tweed. It has inverness cape sleeves, loose belted back and inlaid velvet military collar.

#### WITH DETACHABLE HOOD

In picture 4 is shown a brand new conception in the way of a coat with detachable hood. The coat is 54 inches long and made of cravenette cloth. The hood is silk lined and reversible and may be buttoned back out of the way. The long cape sleeves are of inverness cut. The whole garment is tailored and broadcloth trimmed.

The other coat in the same picture is 40 inches long, with fly front. It is made of Scotch weave cloth and has a half-loose belted back. The coat is fancy strap and button trimmed and has new sleeves and cuffs and a notch collar.

One of the most generally welcome features of the garments of this season is the clever manner in which the new cravenette goods has been adapted to this usage. Made in numerous styles, it is generally striking in effect and as dressy appearing as any of the regular cloths used, and does not possess the stiff, uncomfortable and somewhat inartistic character of most moisture proof fabrics. For instance, its adaptation to the hooded coat illustrated affords a garment of extreme stylishness which is at the same time eminently useful and particularly well adapted to all around automobiling. The method of utilizing this goods to get the best out of it is, of course, an important factor.

**EDITOR'S NOTE**—The garments illustrated are selections from the stock of Chas. A. Stevens & Bros., of Chicago.

#### BUSINESS CAR TEST SETTLED

New York, March 9—There was a meeting of the A. C. A. contest committee this afternoon, at which the conditions of the proposed commercial vehicle test were discussed. Toward the end of the week there will be issued in printed form a tentative outline of the proposed rules. These will be expected to call forth such suggestions and criticism as will be valuable in the final formulation of the rules.

The dates chosen for the contest are May 20 and 21. The course each day will be 20 miles and will be gone over twice, making 40 miles in all per day. The 20-mile course will

be from the club house to the Battery and then over uptown streets. The first day there will be no voluntary stops. The second day there will be stops at stated places, theoretically, it is presumed, for the delivery of packages.

All classes of vehicles will take part in the test. The electric, gasoline and steam classes will be each subdivided into four classes, based on the load to be carried, which will be respectively 750 pounds, 2,000 pounds, 3,500 pounds and 10,000 pounds.

#### BUFFALO SHOW THIS WEEK

The Buffalo local show, under the direction of F. J. Wagner and W. C. Jaynes, is in progress at Buffalo this week. It is held in Convention Hall and contains about sixty distinct exhibits. The building is well decorated and the attendance indicative of fair business results.

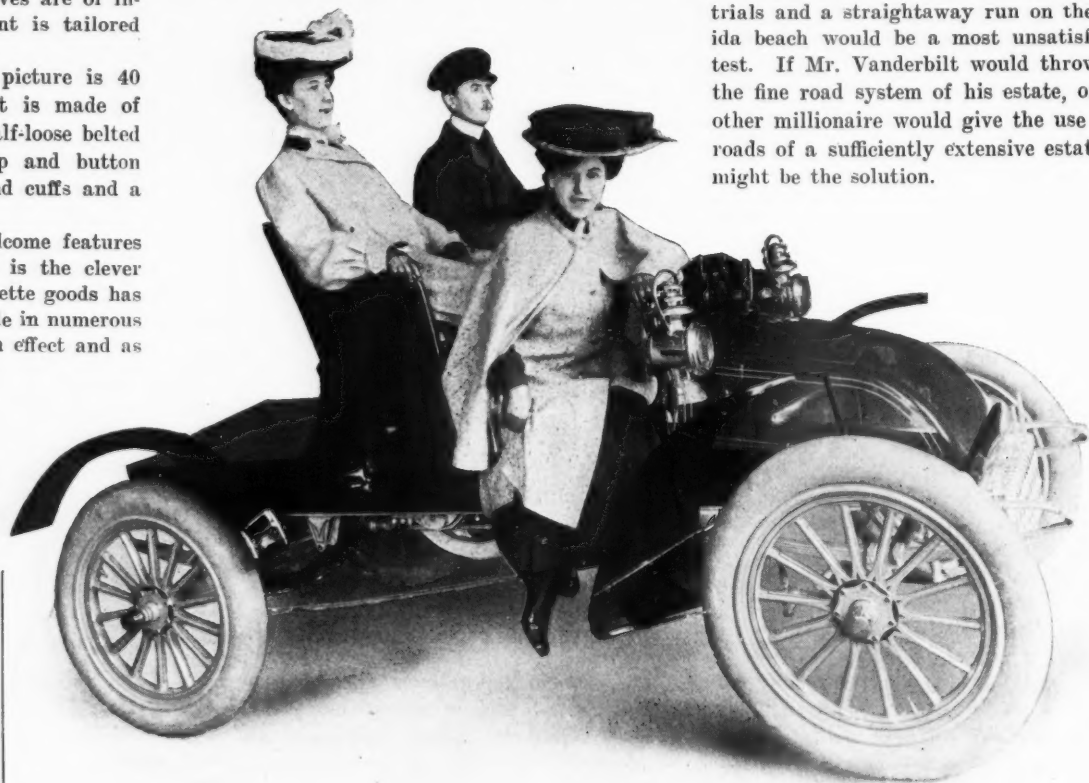
#### THE TEST WILL BE SEVERE

New York, March 8—In a conversation with a MOTOR AGE man a day or two ago Dave Morris, a member of the A. C. A. racing committee—while he could give no information of the character of the eliminating tests for the American team candidates, or where they would be held—wound up the talk with the statement delivered with impressive emphasis: "The tests to which the machines will be put will be most severe and most thorough."

There could be no lingering doubt left after hearing this and noting the positive manner of its saying, that the committee was at all "in the air" as to what the tests were to be or how and where they were to be put through.

It is believed that all the candidates would readily consent to the tests being held on the other side and the eliminated candidates serving as an alternate reserve force, and so there are many guesses that trials in Ireland or on the continent may be the solution.

The candidates are said to be stubbornly opposed to track trials. It does not seem possible that consent can be secured for road trials and a straightaway run on the Florida beach would be a most unsatisfactory test. If Mr. Vanderbilt would throw open the fine road system of his estate, or some other millionaire would give the use of the roads of a sufficiently extensive estate, this might be the solution.



MOTOR AGE

COSTUMES FOR THE LADY AUTOMOBILIST

Picture 3



# PARIS-MADRID TO BE THE GREATEST RACE EVER RUN

With all doubts of the running of the Gordon-Bennett international team race over an Irish course in July practically removed, the eyes of automobilism are focused on the Paris-Madrid open contest, which will start on May 24 and inaugurate the racing season of 1903.

Although entries to the great trade race will be received up to May 15 the first closing of entries occurred on February 15 and the drawing for starting positions took place the following day.

## POSITIONS OF STARTERS

As told briefly in *MOTOR AGE* last week the entries numbered 232 as against 171 for the Paris-Berlin and 218 for the Paris-Vienna and comprised ninety-six heavy, sixty middle and thirty-nine light weight cars and thirty-seven motor cycles.

The result of the drawing for starting positions is interesting. A De Dietrich is to be the first starter. A cable on Sunday last stated that Charles Jarrott, who originally drew number 176 for himself, will drive it, though in the Gordon-Bennett race he will drive a Napier. A Panhard & Levassor is number 2 and a Renault third. As M. Renault, last year's winner, does not appear among the individual entries, it may be assumed that he will take the mount on this luckily placed car.

Among the positions drawn by drivers of note were: H. S. Harkness, number 9; Baron de Forest, 68; Henri Fournier, 83; S. F. Edge, 89; Foxhall Keene, 114; Clarence Gray Dinsmore, 123; Henri Loste, 133, and Ernest Loste, 183. The Matheson cars are the only American make to enter in the trade team race. They drew Nos. 95, 100 and 101.

The scoring will be difficult and in whatever manner it is conducted will necessitate unprecedented care to insure accuracy.

Positions will mean much in a contest of several hundred cars, as there surely will be, for entries will be received up to May 15, and 350 may not be too liberal a guess of the total. It does not appear quite settled whether the contestants will be started at  $\frac{1}{2}$ -minute or at 2-minute intervals. The former would tend to difficult timing and quick congestion along the route and the latter to a long drawn out start of hours. The time of each will be taken and the starting order on the second and third days of the race will be on the basis of the aggregate time, the fastest first and so on.

## NO ALLOWANCE FOR REPAIRS

Practically no attention is to be allowed the cars for repairs and adjustment and no handling except by the crew of the car. Beyond 2 minutes permitted for cleaning the cylinders of the gasoline vehicles and blowing off the boilers of the steam machines, there can be nothing done in the official garage. All repairs must be made on the road and will be included in the running time. In previous

contests these restrictions did not prevail. Brigades of repairmen lined the course and new covers were put on tires at each control. The Paris-Madrid will really be as much of an endurance test as a race.

## THE TRADE COMPETITION

The trade team race feature will not be less important than the contest for the individual prize itself. Manufacturers have been invited to name teams of four cars, which will compete on a point basis. The response has been quite general. All the leading makers are represented by teams and the trade entries are nearly as numerous as the individual nominations. The awards in the trade con-



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## COSTUMES FOR THE LADY AUTOMOBILIST

test are in four groups. Teams that finish all four cars will have the aggregate of their times taken and rank relatively according to the total. Those that finish three, two and one, respectively, will constitute separate groups and rank according to their total mileage, a car failing to finish being credited with mileage up to the last control at which it was scored.

## SOME OF THE DRIVERS

A cable to the New York Herald on Sunday said that H. R. Kirk, J. A. Holder, S. F. Edge and Mark Mayhew would drive the Napier team cars, and Lieut. Mansfield Cumming and Wolseley.

George Arents, Jr., of the Automobile Club of America, is the owner of one of the Mercedes cars entered. His chauffeur, who will drive it, was scheduled to sail from New York on Tuesday to visit the Cannstadt factory and familiarize himself with the mechanism of the racer.

H. S. Harkness, who is also a candidate for the American international team, expects to sail with his racer immediately after April 11, the time set for the candidates to report to

the committee in New York for orders as to the eliminating tests.

## BY THE KING'S MOST EXCELLENT MAJESTY

Here is the bill which is expected to go through the British Parliament and make the Gordon Bennett cup race on Irish soil possible:

Be it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1—The council of any administrative county may, on the application of any persons or club by order declare that any roads within the county may be used for races with light locomotives during the whole part of any days specified in order, not exceeding three days in the year.

The order may contain such provisions as the county council may think fit for the temporary suspension and regulation of other traffic for the safety of the public, for the restriction of speed in populous places, and for other purposes incident to the proper conduct of such races.

Public notice shall be given of the provisions of the order by placards on the roads so authorized to be used.

No provisions of any act, by-law, or regulation, restricting the speed of locomotives or imposing any penalty for furious driving shall apply to any light locomotive, or the driver thereof, engaged in such races save so far as the same may be incorporated with the order.

2—The expenses incurred by a county council in carrying any

order under this act into effect shall be defrayed by the applicants, and the county council may before granting the order require the applicants to make such deposit as may in their opinion be necessary to defray such expenses.

3—In this act the expression "light locomotives" shall have the same meaning as in the locomotives on highways act, 1896, and all other expressions shall have the same meaning as in the local government (Ireland) act, 1898.

4—This act shall extend to Ireland only and may be cited as the light locomotives (Ireland) act, 1903.

This act shall only remain in force until the 31st day of December, 1903.

## FOR INDIVIDUAL MEMBERSHIP

New York, March 11—The American Automobile Association at a directors' meeting yesterday decided to accept the much desired individual membership plan.

Kalamazoo, Mich., automobilists are threatened with a regular old-time blue law.

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Any newsdealer may obtain MOTOR AGE through the Western News Co., Chicago, or any of its branches.

**NOTE TO READERS**—Motor Age wants photographs of automobiles in use and will be pleased to receive such pictures from its readers. Automobiling oddities and scenes showing good roads are especially desirable.

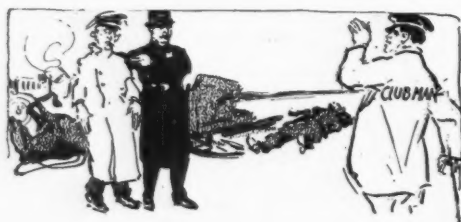
## CLUBS AND THE LAW

In the constitution of practically every automobile club may be found some statement to the effect that among the objects of the club is the protection of the interests of the automobilists of the community to which the club belongs. Many, if not all, of the various clubs have done more or less work along the line of promoting the interests of the members and protecting their rights. It is satisfactory to note that in nearly every case these efforts have been conservative and gentlemanly.

There could be no greater curse to automobiling than action by clubs which would tend to intensify any feeling that may exist on the part of law makers that automobiling is to be deprived of common privileges. The effect of irrational and selfish automobiling on the part of individuals is felt in every large city.

Because of the reckless driving of a few owners of automobiles all are subjected to drastic measures and close surveillance. All are classed as dangerous members of society and between the newspapers and the city fathers the people are brought to believe that automobiling is an accursed sport. This is an extreme situation seldom reached, but in almost every city there is a tendency of feeling in this direction and it is caused directly in every case by the selfishness of one or two drivers who see fit to care for none but themselves.

The rank and file of the automobilists are careful drivers. They need little restriction save that of their own spirit of gentlemanly conduct. The clubs foster this spirit. In dealing with legislative bodies it is the aim of most clubs to present this side of automobiling and to show a co-operative rather than a belligerent desire. This method of carrying out the purpose of fostering the interests of automobiling should be universal. It will accomplish more toward rational legislation than



anything else. It will prove successful where constant combativeness will fail.

A fight with law makers may be necessary now and then, but with every fight there should be a firm request for a chance to show the exigencies of the case, and whenever a club seeks to prevent legislative walloping it should point out emphatically that it represents only gentlemanly automobiling and does not desire to protect dare-devil driving.

## WORLD GIRDLING

It is up to some American with an American automobile to take a chance at encircling the globe. A European has tried it with a French machine. A combination of circumstances put an end to the trip in drear, desolate Russia. The proud Panhard was all but deserted in an ice bound district—left to be purchased by a Londoner bent on bringing it back to London for exhibition purposes.

A round-the-world trip is still to be accomplished and is still of value as an advertising medium. But it is no easy task, even for an American automobile built to stand the rough roads of America. Nature must be consulted. The aspirant for first honors in this line should pick a route and a time which would enable him to cross the most difficult stretches during the most favorable seasons. Landing in Russia in the middle of the winter is not a pleasurable anticipation. It is not just to the automobile.



## ROADS THE WHOLE FIGHT

Automobilists in various communities are more or less worried by pending state and municipal legislation. Several moves are on foot to head off drastic measures aimed at automobiles.

Automobile clubs in nearly every instance seek only to prevent irrational measures and are willing to support conservative legislation. Their work is just and valuable. But through the whole fight runs an under current of effort toward better roads, and in the effort to create great highways in great America is the whole fight for the rights of automobiles. Good roads naturally mean fair legislation.

The growth of automobiling will be rapid enough to force legislation by its own strength. There is little need of fear that foolish legal measures can long endure even though now enacted. Affairs of this kind in time adjust

themselves. As soon as automobilists cease, by their number, to form a class, class legislation becomes void and harmless. But the nearer automobiling comes to emerging from a class the more important becomes the good roads movement.

The development of automobiling is hand in hand with the development of good roads, and good roads alone can make the universal automobile.

Good roads and many automobiles mean an end to dangerous road travel. Less vehicles doing the work of the community; all vehicles traveling faster, and better roads permitting greater elasticity in vehicle control, remove the congestion of the present and produce a condition in which legislation toward any branch of road users would be worse than foolish.

The whole fight of the automobilists is for good roads. All other efforts are but subsidiary and passing. In enthusiasm over them sight should not be lost of the big struggle, the great work.

## AUTOMOBILE LITERATURE AND SHOWS

Everyone concedes that the development of the automobile and the sale of automobiles has been phenomenally rapid. What has made it so? The development of the automobile has been due to the desire of one maker to excel another and so please the public and satisfy its demand. What taught the public what to demand, and taught it so rapidly as to tax the resources of the manufacturers to keep pace?

Two things—automobile literature and automobile shows.

Automobile literature taught the public what to expect, what to look for, what to see. The shows furnished the actual demonstration, the actual education. One may learn much in a short time, from careful perusal of the literature of any undertaking. Actual contact, however, teaches more quickly, more thoroughly, more practically.

We have already reached the stage of doubt as to the efficacy of automobile shows. The same period was reached in the days of cycle development. To some makers the show is already undesirable. They are generally of the class which is unwilling to show its product in competition with the best. The show is a big market where the initiated may inspect, test, learn all about every part of the vehicles offered. The manufacturer who possesses confidence in the goods he offers and is willing that comparisons be made has nothing but good words for the show. He realizes its value as an educative medium and knows that no surer method can be employed to show the public the good and the bad, and that this must inevitably redound to the advantage of the good.

So far there are few objectors to the automobile shows. A few there are whose limited output is sold, who have no object in creating a larger demand. They, naturally, do not deem it wise to undertake the necessary expense. They wisely stay away. The others are well pleased with the shows, both because of the immediate business resulting and because of the excellent effect of the education they furnish. Most of them consider shows absolute necessities.

By journeying from one end of the country to the other, by visiting one dealer after another and spending 6 months in the work, the seeker after information might imbibe a reasonably correct understanding of the development of the industry. It could not well be done in less time. One goes to the shows,



examines all the products, flits from one booth to another to make comparisons and learns as much or more in a single week. Any one who is familiar with the subject is well aware that at both of the great shows this season were to be found men, well versed in the art, owners of machines who perhaps have no idea of buying again this season, but desirous of ascertaining all that is new relative to the machines. They go to educate themselves and, incidentally, to be of use to their neighbors and to make sales, sooner or later, for the manufacturers.

But beyond all the show is valuable as an educator of the dealers. Once upon a time the few men who then ruled over the destinies of the manufacturers' association looked askance at dealers and doubted whether they cared whether the dealer came or not. In those days they were of opinion that for some years to come, at least, they would be able to sell all the machines they could produce direct to the consumers. But today all that is changed. Every maker wants to sell to good dealers. To make this possible the dealer himself must be educated. He must know all about what the market affords and everything the automobile will do. There are hundreds of uses for the automobile. The dealer who doesn't know what the machines are capable of doing and where they can, with safety, be sold, cannot adequately represent the industry. And nowhere else can he get the necessary information as quickly and as surely as at the shows.

The public can obtain its education to a great extent through the dealer, but without education of the dealer the public cannot learn. Without the educational advantages of the shows the trade would have taken years instead of months to develop.

Look backward a year or two to the first

show at Madison Square Garden. People who were fortunate enough to attend will recollect that the public was densely ignorant. They will recollect that a majority of the people wandered around the garden, drawn by curiosity. Some became interested. They were of the class which seeks education and transmits the information gathered to other people. Many of them became convinced of the great future of the automobile and became dealers. The sale of many thousand dollars worth of machines might be traced directly and indirectly to that first show. Then came the Chicago event. Chicago, as usual, cared less for the result of the event from a showman's standpoint than from the commercial result. It reached out after the men who might become dealers, many of them the best class of cycle dealers. They came in reasonable numbers, great numbers as a matter of fact considering the juvenility of the industry, and went away primed with the latest information, ready to transmit it to prospective customers. Thousands of people owe their first information about automobiles to the few men who attended those two shows and made a study of the machines there offered.

The next year showed a wonderful advance. Again New York's thousands were attracted and again the sales were satisfactory. At Chicago the number of dealers increased. The educational work extended. Ten people learned something about automobiles to one of the year before. And still the industry grew and the sales multiplied. And of this year? Everyone knows all about the thousands of people who invaded Madison Square Garden. The sales were satisfactory, but that is not all. The people came, more than ever before, to learn. And they did learn. Then came Chicago, strong, as usual, in the gathering of agents. How many of them? Perhaps 100 in the first year, 200 the second, but over 600 the third. These figures are attested by the records of the railroads associations.

There are two ways to consider the result of shows. One is from the standpoint of immediate sales. The other is from the general good of the industry. Few exhibitors went away dissatisfied with the result in actual sales. Six hundred agents came and were educated. They went away to all parts of the United States to deliver the information they had gathered to a hundred times as many prospective customers. Who will undertake to tell of other means by which the same amount of good could have been accomplished?

#### SPECIAL PURPOSE AUTOMOBILES

From almost every large city come frequent stories of companies organized to introduce the automobile to some form of traffic or transit far different from the ordinary purposes of the trade's regular motor cars. This spirit of advancement is growing far more rapidly in the open community than it is in the automobile trade. Makers being busy in the endeavor to produce pleasure cars in keeping with the demand, it is but natural that their attention is not turned to the creation of cars for special purposes.

Yet this very introduction of the automobile into special fields is bound to become one of the greatest factors in the common acceptance of the automobile as the natural successor to the horse. For, in nearly every case where an automobile is adapted to some more or less odd usage, the attempt is made with a view to either increasing the ef-

ficiency or reducing the expense of the service. In either case it is a matter of sordid business. There is no sentiment; no fad.

If private corporations or railway companies establish automobile coach and omnibus lines to compete with street car lines in general street transit and in bringing passengers to railway stations, the move is made solely as a commercial necessity in a time when rapid service is demanded by the people.

If the fire department of a large city adopts horseless fire engines, hose trucks and marshals' wagons, it does so after it has been demonstrated that the efficiency of the department is increased thereby.

If transfer companies are organized to establish baggage and passenger routes from depot to depot and from depots to hotels, they owe their existence to a desire to improve upon the present horse service.

If business houses put electric, steam and gasoline trucks into freight hauling operation it is because they wish to cut the expense and increase the capacity of the service.

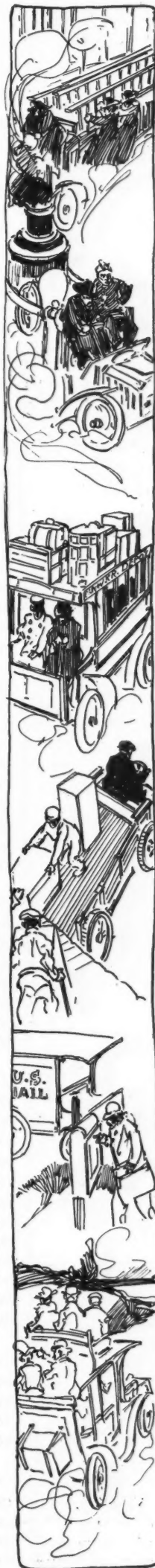
If postal departments adopt the automobile for city mail collection or for rural mail delivery they do so feeling sure that the automobile is a better medium of transit than the horse and wagon.

If retail stores displace horse wagons with automobile light delivery wagons they do so to enhance the delivery service by reducing cost and better serving their patrons.

If local corporations establish inter-urban automobile bus lines it is in the expectation that they will prove cheaper and more efficient than would electric trolley lines.

If pleasure resort hotels place automobile stages in operation it is to furnish their guests superior service in this line.

For all the popularizing of the pleasure automobile the greatest influence in creating an actual motor age is the special purpose car.



## MORS TIMING APPARATUS CHOSEN

### The Automobile Club of France Selects Its Official Electric Record Making Machine in Dourdan Road Trials

Paris, France, Feb. 28—As the result of the trials recently carried out with the electrical timing devices on the record mile stretch at Dourdan, the sporting commission of the Automobile Club of France decided to split up the prize of a thousand francs, offering the larger part to M. Pottier, an electrical engineer at the Mors works, for the apparatus which is known as the Mors device, and the remainder to Count von Stralsee, of Vienna. These were the only two that in any way fulfilled the conditions of the trials, for though half a dozen other instruments were presented, they were of much too delicate a character for the somewhat rough work of timing a number of vehicles on the road.

The jury were unanimous in giving the palm to the Mors, in which each movement of the seconds hand causes breaks of electrical contact, when a needle pierces a moving ribbon of paper. The minutes are distinguished by larger holes. As each car passes over the line the ribbon is perforated near the edge to distinguish it from the others. It is very easy, therefore, to read off the seconds and fifths between the perforations representing the passage of the car over the two lines, and the position of the perforations between the fifths marks will allow of the seconds being split up into tenths or even hundredths.

An advantage of this system is that it is not necessary for the ribbon to move at an absolutely uniform speed, since the fractions of time are marked not by space but by the perforations. The apparatus of Count de Stralsee is a clever and efficient device, but its cost is high. Some of the other instruments contained good ideas, which may ultimately be put into more practical shape, but meanwhile the committee is perfectly satisfied with the Mors and Von Stralsee devices, and one or the other is to be employed in the future for all mile and kilometre record attempts.

## WANTS A LARGER CLUB HOUSE

### Massachusetts Automobile Club Thinks It Has Outgrown Its Commodious Quarters—Will Build Anew

Although now possessing what is acknowledged to be the finest automobile club house in the country, the Massachusetts Automobile Club, of Boston, is about to take on to its shoulders the construction of a building which will entail an estimated outlay of about \$280,000.

The site of this new structure is not to be far removed from the present house, the location most favored being on Boylston street, just above Massachusetts avenue. The building is to be a large two, and perhaps three-story structure, and will contain some few features lacking in the present house. The great trouble with the present quarters is that the garage, so-called, is far too small to accommodate the ever increasing number of vehicles. The basement, the main floor and a portion of the upper story are used at all times for the storage or stabling of vehicles.

The garage of the new structure will accommodate 125 machines, while the basement will be used as both a machine shop and an emergency garage. The main garage will be

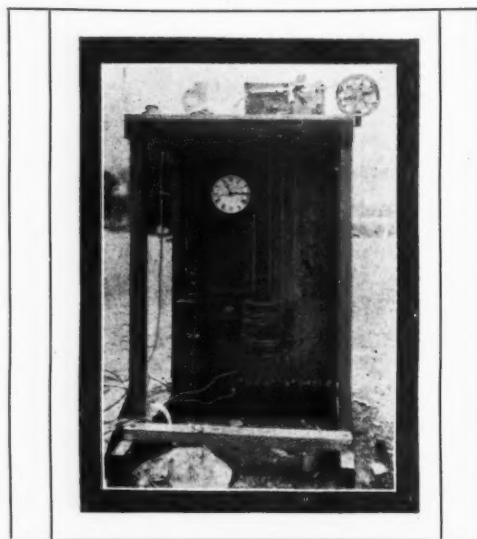
located on the main floor, and will have a finely appointed waiting room, as well as a locker room. The second floor will be devoted entirely to club rooms, the idea being to get all the rooms on one floor.

Just what will be done with the present quarters is undetermined, but it would not be at all surprising if it were remodeled to conform to the main building, of which it is a part, and which is used as an apartment hotel.

## AFTER A STATE ASSOCIATION

### Syracuse Club Members Trying to Affiliate the Clubs of New York—Good Roads the Chief Object

Members of the Automobile Club of Syracuse, N. Y., have revived their scheme to affiliate the automobile clubs of New York state. This plan was originated last fall, but, owing to inability to get the officers of the different clubs together, was laid over. A committee on organization has been appointed, of which H. W. Smith, W. L. Brown and F. H. Elliott, of the Syracuse club, are members. It is the intention to call a meeting for the



MOTOR AGE

Von Stralsee Apparatus

purpose of forming a permanent organization, and Mr. Smith will be the regular candidate for the presidency of the association. The particular object of the proposed organization is to promote the good roads interests in New York state and to assist in securing favorable automobile legislation at the state capitol.

## OLDFIELD AND COOPER START A CIRCUIT

Barney Oldfield and Tom Cooper are preparing to invade Michigan with a small city circuit of match races on their twin Ford racers. The proposition is to ride match races in every town on the circuit, and two smaller cars may be taken along to compete with local automobilists.



MOTOR AGE

The Mors Timing Apparatus

## A CLUB HOUSE WITH RACE TRACK

### Suburban Headquarters Established for New Yorkers—Current News of the A. C. A. and Eastern Automobilists

New York, March 9—Charles Carson, of New York, has leased Elkwood Park near Long Branch, N. J., with a view of making it a headquarters for automobilists. There are a club house and a mile track on the grounds. The latter is to be remodeled for racing and speeding purposes. With these advantages the park should be a popular rendezvous for the many automobilists who make the Jersey shore their home in summer.

Secretary Butler, of the A. C. A., returned on Monday from a 10 days' vacation spent at Southern Pines, N. C., and Lakewood, N. J.

Rain prevented the season's inaugural run of the New York Motor Cycle Club set for last Sunday.

## CHARITY RACE MEET

W. T. Rainey and Roy A. Rainey, of New York, are engaged in the promotion of a race meet at Savannah, Ga., for a charitable object. On their visit to Savannah last spring they promoted such a meet successfully. They have with them a high powered Panhard and a speedy Mercedes and have sent to the Oldsmobile Co., of New York, for some Olds and Franklin machines to help out in the racing.

## ROAD ACROSS JERSEY MEADOWS

The Hudson county, N. J., freeholders are considering the laying of a macadam on the road across the Jersey meadows from Jersey City to Kearney, which is a 2-mile shorter cut to Newark than by the present route over the old plank road. Road Commissioner Budd favors the scheme, which will entail an outlay of \$50,000, and furnish the first good road connecting link between Jersey City and the state's improved highway system.

## DR. KAHN LECTURES AT A. C. A.

Dr. Ulysses Kahn, surgeon for Count Leon-tiff's exploring party into Abyssinia, lectured at the A. C. A. on Tuesday on "Camp Life, Customs and Scenery in Abyssinia," with lantern slide illustrations.

George F. Baker, of New York, will shortly sail for Europe, where he will make an extensive automobile tour.

## PLANNING NEW YORK-CHICAGO RACE

### Club Members in Both Cities Hope to Promote the 1,000-Mile Event—Chicagoan Will Tour

The Chicago Automobile Club has been requested by the members of the racing committee of the Automobile Club of America to assist in formulating plans for the much talked of New York-Chicago race. It is still undecided what form this race will take, but enthusiasts at both ends are firm in the belief that it will occur, and that the final announcement will not be long forthcoming. The prevailing sentiment at the western end of the route is for a strictly speed contest—a race—the longest outright race ever run by automobiles, and probably the most severe, in consideration of the quality of the course when compared with the routes over which the famous European events have been run.

The members of the Chicago Automobile Club are planning a tour from Chicago to Mammoth Cave, Ky. It is scheduled to start



June 25 and endure until July 9. At least a dozen cars are promised from the Chicago club, and it is said that automobilists of other western cities will join the party. The plan proposes daily journeys of about 100 miles and a tour through certain portions of Kentucky in addition to the visit to Mammoth Cave. The route proposed is through South Bend and Indianapolis, Ind., and Louisville, Ky.

### FLYING TRIPS ON THE BEACH

Record Breaking and Fast Time Average Expected at 3-Day Meet on Daytona-Ormond Florida Course

The Florida Automobile Association, recently organized, is progressing rapidly with its plans for the Daytona-Ormond beach races of March 26, 27 and 28. The program is being made and prizes amounting to \$2,000 are promised. Special prizes have been offered for record events and some of the enthusiasts predict a speed of 45 seconds to the mile.

The managers of Hotel Ormond are much interested in the event and have constructed a plank roadway from the hotel to the beach and erected a temporary automobile station on the beach. Entries for the races may be made to Dr. F. P. Hoover, secretary of the Florida Automobile Association, Jacksonville, Fla.

A good roads meeting is being organized in connection with the race meet and to be held on the evening of the first day of races. Among the speakers will be Isaac B. Potter, president of the American Motor League.

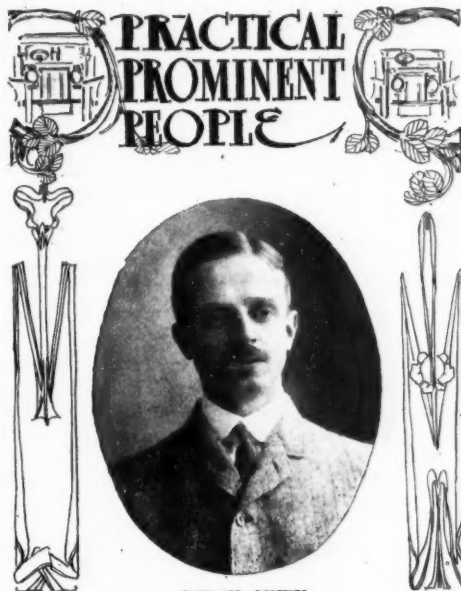
### ENGLISH OILED ROAD WEARS OUT

According to English advices an experimental oil road constructed in the district of Surrey, England, several months ago has not given the anticipated results. In fact, the effect of the treatment of the road has been in sharp contrast to the success attained in road oiling in France. When the road was first laid the oil seemed to bind the surface material into a sort of plastic substance to be rolled down by the wheels of vehicles. No dust was thrown up from the road even by heavy automobiles run at full speed. After several months of use the oil seems to have disappeared from the road.

The surface is now cut up and almost as dusty as the unoled surface. The passage of a light car with 3½-inch tires, running at 25 miles an hour, leaves just as much dust from the oiled surface as from the unoled. Probably the English road makers have something yet to learn in this matter, and probably, also, it might be wise for Americans to get whatever knowledge there is to be had from the experience of the Frenchmen before going deeply into the same proposition.

### MOTOR STAGES IN THE COLONIES

Establishment of a daily automobile service between Gaudeloupe and the town of Ste. Rose is reported to the State Department by L. H. Ayme, United States consul at the former point. This line, says the consul, is the first step toward the substitution throughout the colony of automobiles for the stage coaches which heretofore have been the only means of land transport. Two new lines were established March 1, one from Basse Terre to Gaudeloupe and the other from the latter city to Le Moule. Gasoline cars are used, each vehicle carrying ten passengers, besides the driver and his assistant.



PERCY OWEN

There are few men in the world of automobiles whose names are better known than Percy Owen. His reputation has become world-wide by reason of spectacular feats in automobile racing, while as a tradesman he is as well known as any man in New York city. Owen is, as successful business men go, a very young man. He was born in Oswego, N. Y., in 1875, and commenced business there with his father, who had a real estate office. He went to New York about 7 years ago to enter the office of Jameson and Frelinghuysen, who, at that time, were the officers and managers of several insurance companies. He was with them for about 3½ years and was advanced through the various departments of their office until he became their special representative in New Jersey and Pennsylvania where he had supervision of all their agents and business. This position meant, also, the inspection of all the risks on which they had issued policies of insurance and he therefore became interested in the manufacturing line and accumulated considerable information on account of the variety of manufacturing done in those two states. Owen spent about a year and a half in this position and believing there was more of a future in the automobile business began, in the summer of 1899, to make inquiries about the various companies, which at that time were few, and in the early winter of 1899, became interested with A. Ward Chamberlin in the New York agency of the Winton Motor Carriage Co. The two immediately engaged in establishing the first automobile storage place in New York, at 57 West Sixty-sixth street, called the Automobile Storage and Repair Co. In the fall of 1900 Owen was appointed eastern manager of the Winton company and opened the business in the present location, 150 East Fifty-eighth street. He was fortunate enough to be one of the early members of the Automobile Club of America and was with the club on its first long distance run, the memorable one through rain and mud to Philadelphia, and the same year was interested in the races at Guttenburg, where with A. C. Bostwick he rode a Winton in the first automobile race meet of importance in this country.

Then Owen became and has since remained a racing man of marked success. Among other feats he established a world's track record for middleweight cars for all distances up to 10 miles in 1901; and for part of the season of 1902 held the records with the Winton "Pup" until they were beaten by Harry Harkness.

Owen is now one of the most prominent men in the racing world by reason of his candidacy for a position on the American team which will seek to bring the Gordon Bennett cup to America. He is serving a second term as treasurer of the manufacturers' association. Socially Owen is an extremely popular man for where he is dullness may never remain.

### EIGHT MILES AN HOUR IN NEW YORK

Aldermanic Committee Favors a Regulation That Is Deceptive in Its Privileges—Speed Depends on Houses

New York, March 6—Had not Jacob A. Cantor asked for a further hearing it is probable that today's public hearing before the aldermanic law committee would have finally settled the road rules and speed ordinance, which have been pending for a year. Alderman Oatman's new ordinance, which embraces various amendments made during the long fight, has finally met the approval of the committee of fifty, the citizens' associations, the cycling organizations and the Automobile Club.

The speed limits as finally agreed upon for bicycles, motor cycles and automobiles are 8 miles an hour in congested Manhattan, and 15 miles an hour in all the boroughs on roads where the houses are 100 feet apart. This practically restricts the pace to 8 miles in the city and permits 15 miles on the suburban boulevards.

The final hearing will occur next Friday and then the committee will make its report. Mr. Cantor has hitherto favored a general limit of 10 miles an hour, and may yet have it in his head to upset the entire present plan arrived at after long discussion and many tribulations.

### BRIGHT FUTURE PREDICTED

Isaac B. Potter, the new president of the American Motor League, believes that the association has a bright future. He says of it:

"The proposition is a knotty and difficult one, but I have tackled it and, with the help of a few friends, I have hope of success. The organization is going to grow and I can almost say that it will outgrow any similar organization in the country. If I have my way about it it will be the only one in sight at a time not far distant in the future. I have found things in a cramped, crippled, chaotic and almost dormant condition, and it has caused me some sleepless hours to know how to start the wheels, but we are beginning to see daylight and I have no serious doubt of the outcome—no doubt whatever."

### ONE WINTON RACER READY

New York, March 10—Percy Owen was made happy yesterday by the receipt of a letter from Alexander Winton stating that the New Yorker's racer for the international cup race had been completed, had been given a trial by Mr. Winton and had come fully up to expectations.

"I know what these expectations were," said Mr. Owen, "and the fact that Mr. Winton deems them fully realized naturally makes me feel jubilant."

Automobile beer delivery has struck Cleveland. One of the local brewers has purchased an electric truck and expects to buy others if it is successful and the beer trade holds out this summer.

## THE READERS' CLEARING HOUSE



### BATTERIES RUN DOWN

Los Angeles, Cal.—Editor MOTOR AGE—Recently I have experienced peculiar trouble with my gasoline automobile. The motor stopped suddenly the other day while out on the road and absolutely refused to start again. I found the battery only gave 3 volts and the extra one gave the same voltage. I joined the two sets of batteries in series, and secured over 5 volts at the contact breaker. I have one of the new sparking plug attachments, which breaks the circuit between the secondary coil and plug. The motor sparks splendidly with the exhaust valve lifted, but when I drop the valve the spark stops instantly. I tested the voltage several times and always found it to be over 5 volts. The secondary wire is a new highly insulated one and does not touch the exhaust pipe or frame. I may mention that I am not a novice, this being my third machine. I have tried all the ordinary remedies, such as a new spark plug, cleaning contacts everywhere, etc. I will be glad if you can clear up the trouble.—W. E. B.

It is probable that the sole cause of not being able to start the motor is that both sets of batteries have run down. The two sets in series might show 5 volts on an open circuit, and have current enough to give a good spark without compression, but of course as soon as the valve is closed the compression puts the spark out. The batteries also should be carefully examined for a short circuit.

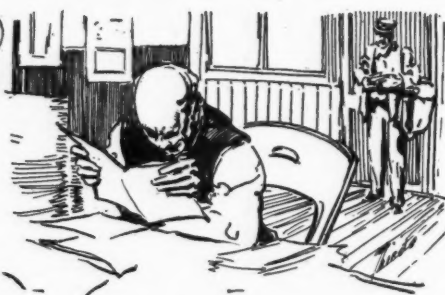
### DETERMINING BRAKE HORSEPOWER

Louisville, Ky.—Editor MOTOR AGE—I have an air-cooled motor which I would like to subject to a brake test. Will you give the required information to enable me to do this? The motor has a cylinder of 2½-inch bore by 3¼-inch stroke, and it is supposed to develop 2½-brake-horsepower.—H. S. F.

The following apparatus will be required: A short length of hemp rope of a size to fit the motor pulley, if a grooved pulley is used, or a piece of belting if a flat pulley; a spring balance reading up to 2 pounds; a set of weights that can be supported on a hook, or in a scale pan, and equal to about 40 pounds; and a speed indicator or revolution counter, which can be obtained from an engineer's tool shop. The spring balance is attached at one end to the rope or belt and the other screwed to a hook in the floor. The rope or belt is then passed over the motor pulley—against the direction of rotation—and to the free end of the rope or belt is attached the scale pan. The pull of the weights will be in opposition to the rotation. It will be necessary to know the mean diameter of the pulley, and then, after the motor has been run up to normal speed the horse power can be calculated from the following formula:

$$\frac{(W-P) \times D \times 3.1416 \times N}{33,000}$$

In which W is the weight pulling against the direction of rotation, P the reading on the spring balance, D the diameter of the pulley, and N the number of revolutions per minute. The chief difficulty in taking the brake horsepower of small air-cooled motors lies in



the cooling of the cylinder. Even with a fan playing on the cylinder it is liable to overheat in a few minutes if run up to full speed, and then the power drops rapidly. With a water-cooled motor it is easy enough to take a reading.

Another method is to couple the motor up to a dynamo, whose mechanical and electrical efficiency is accurately known, and then, from the output in watts, or the amperes multiplied by the volts, the horsepower can be determined. This method, however, is not usually within the range of the average motor user.

### ROTARY GASOLINE MOTOR

Paris, Texas.—Editor MOTOR AGE—Will you please answer a few questions through your columns? I am a "motor crank" and have a few pet theories of my own which I would like exploded or strengthened. Why is the continuous combustion motor but little developed, and why is it not used in motor vehicles? I have in mind plans with its use which I think would reduce complications in gasoline machines. Is it not as flexible a motor as a steam engine and could not it be used with a direct drive and reverse only? If such a motor as I have in mind were practicable I could build a machine with the good qualities of the steam car minus the boiler troubles with its connections, together with those that are good in a gasoline motor, without the spark and its many troubles. I believe this would be an ideal machine, and that to eliminate such troubles as those mentioned would reduce those of the automobile at least 75 per cent.—C. E. Bassano.

No rotary internal combustion motor has been made that will show an efficiency of even 15 per cent of that of the regulation motor of the four-cycle type. It has been found that a compound explosive motor is hardly practical and the efficiency of a rotary form of such motor is still more doubtful. As water is capable of expansion in the form of steam to 1000 times its original volume and air to only sixteen times, it follows that the chance of success of the gas turbine as compared with a steam turbine is small indeed.

### RECUPERATING STORAGE BATTERIES

Brooklyn, N. Y.—Editor MOTOR AGE—I am now getting my electric automobile ready for the coming season, and find on running it that I am getting less than one-half the mileage with a charge than I did last year. Can you tell me where the trouble lies? The bearings all run as easily as ever, and I am sure there is nothing wrong with the motor or wiring; in fact, I think the trouble is right in the batteries.—M. Stanley.

But for the statement concerning the easily running bearings it would have been a natural conclusion to say that the trouble was located there. With some types of batteries,

especially those with pasted plates which have not been fully charged as a regular practice, the active material seems to degenerate or return to its former crude state as red lead or litharge. To recuperate the battery empty out all the old electrolyte and fill the cells with pure water. After they have stood for about an hour slowly and completely discharge the cells. Then empty the water out and refill all the jars to the right height with new and pure electrolyte of the proper specific gravity. As soon as all are filled charge them to the voltage advised by their makers, and for about 2 hours thereafter at one-half the normal charging rate. The vehicle can then be tried and if not quite up to the mileage it should give, repeat the overcharge. It may be necessary to give the batteries three or four of these overcharges in order to bring them up to capacity.

Should it be found on following the foregoing that the batteries have not been helped, then it is safe to assume that considerable of the material in the positive plates has been washed out, or possibly that both positive and negative plates have become sulphated through standing in a discharged condition during the winter. Both of these conditions can be determined by removing two or three cells from different portions of the battery and taking out their elements. If the bottom of the jar is full of a sort of mud up to the bottom edges of the plates, it is safe to say that the battery has received great abuse and is in a fit condition for overhauling. A sulphated plate has a pure white deposit all over it, and is not entirely spoiled. It would be wise to consult the manufacturers when either of the last two difficulties are shown.

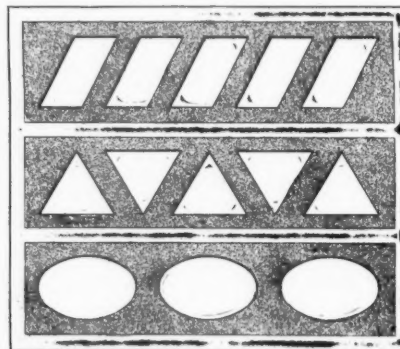
### FORM OF CATALYTIC IGNITION

Louisville, Ky.—Editor MOTOR AGE—I would like to know if the catalytic ignition device recently described in MOTOR AGE is as good or better than the form of electric ignition now in use? It seems to me that if practical it would be much simpler.—F. B.

The catalytic form of ignition recently described is said to have been in use over 10 years ago on stationary gas engines. As to its respective merits as compared with the jump spark form of ignition it has not been given sufficient trial on automobiles to determine its qualities. It is certainly simple.

### TWO-CYCLE MOTOR PORTS

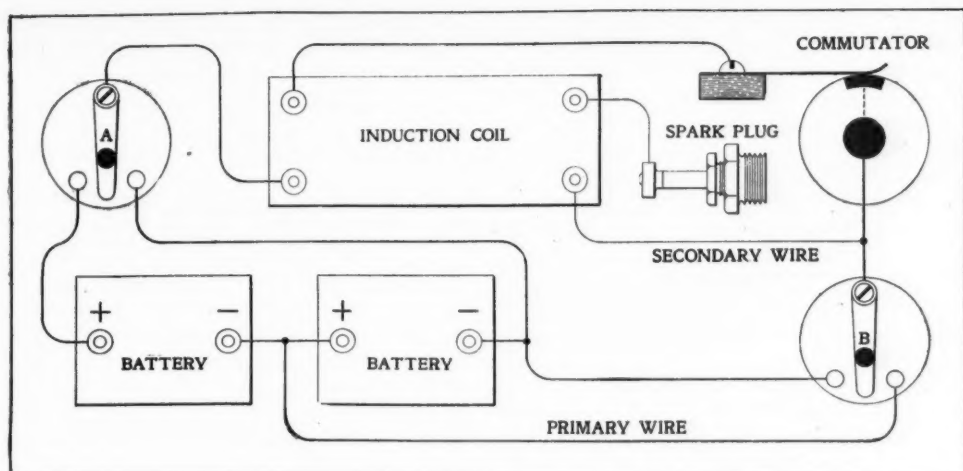
Sidney, Australia.—Editor MOTOR AGE—I wish to construct a two-cycle gasoline motor, and what I wish to ascertain is how the piston rings are prevented from expanding into the ports? If ports are 1 inch wide and the



MOTOR AGE

Two-Cycle Motor Ports





MOTOR AGE

WIRING FOR TWO BATTERIES

rings are only  $\frac{1}{2}$  of an inch wide, every time the rings pass the ports a large portion of the ring is unsupported by the cylinder wall and the tendency will be for that portion of the ring to expand into the port and so jam the piston. What is the compression necessary in the crank chamber? I understand it is about 5 pounds to the square inch.—R. V. Hodgson.

The piston rings are usually prevented from expanding into the port by having ribs across the latter, while some makers of two-cycle motors use a number of round or oval openings instead of a continuous port. Various methods of constructing port openings are illustrated. The crank chamber should be made as small as possible in diameter and width, to insure the highest degree of compression. The pressure is usually about 5 pounds to the square inch, but if higher compression can be obtained higher speed and consequently greater power will result.

#### WIRING TWO SETS OF BATTERIES

Springfield, Ill.—Editor MOTOR AGE—I would consider it a great favor if you would publish a wiring diagram showing how to connect two sets of batteries with a switch so that either set may be used, or both together in series, when they are partially exhausted, and so that no disconnecting or rearrangement of the wiring is necessary.—P. F.

The diagram shows the two sets of batteries so arranged that by the use of the switch A, either set may be used or both cut out entirely. The switch B is normally on the right hand contact, but when desired to throw both sets of batteries into series, it is moved to the left hand contact, and the switch A used on the left hand contact.

#### SOMETHING WRONG WITH FUEL

Toledo, Ohio.—Editor MOTOR AGE—I have a gasoline runabout of a well known make, most of which have given great satisfaction and have run hundreds of miles without a mishap or breakdown. With my car it seems, however, to be different. Sometimes I have to turn the starting crank for twenty minutes before the motor will give a single explosion; again it will start with only a few turns. The batteries and coil are in perfect condition and both porcelain and mica spark plugs have been tried without giving any better results. The carbureter is of the float feed type. What is the reason for this trouble?—J. P.

If as stated, the ignition is perfect, the failure to start the motor must lie in the fact

that the motor cylinder does not get an explosive mixture, due to the lack of the proper supply of gasoline or perhaps none at all. The carbureter, if it is not already so equipped, should be provided with a small plunger or "tickler," so that the float may be depressed and gasoline allowed to flow at the jet or nozzle of the carbureter. Almost closing the air inlet will produce the same result by creating a partial vacuum in the air inlet pipe, thereby causing the gasoline to flow from the nozzle of the carbureter.

#### TWO-CYCLE MOTOR DESIGN

Columbus, O.—Editor MOTOR AGE—The accompanying sketch shows a two-cycle motor of simple construction and for high speed. The design contemplates the use of the usual air-tight crank case for preliminary compression, this and other details being omitted in the drawing, as the object here is merely to show the principle of operation. I have never built such a motor and consequently have no knowledge of its efficiency. The exhaust port practically surrounds the circumference of the cylinder. The object of this construction is to provide large exhaust area, assuming that this is an indispensable requirement for high speed in a two-cycle motor.

The drawing shows two exhaust ports for this purpose, each of which may be as large as the single port commonly employed in engines of other types. By this means the exhaust area is doubled, and the capacity for high speed and increased power proportionately augmented. The transfer port, also of large size, is conveniently located in the piston head, and closed by a simple valve. The opening being surrounded by a cone-shaped tube or funnel, from which the charge passes upward through the center of the cylinder, driving the exhaust before it, the burned gases are caused to descend next to the walls of the cylinder and to pass out through the exhaust ports.

The igniter should be so located as to be within the valve cavity when the spark occurs. It seems obvious that it would be scarcely possible to devise a more simple system than this, or an engine having fewer or more easily constructed parts. The objections may be that the valve will cause back firing, and is not capable of a sufficiently rapid action at high speed. This point is open to discussion but it may be observed that some types of two-cycle motors have a check valve in the transfer port. Again, pure air only could be admitted through the valve, the gas being forced in afterward. This construction is identical with that formerly used in a four-

cycle motor which ran at a very high speed. The device is virtually an adaptation of an expired four-cycle motor patent adapted to a two-cycle motor.—S. M. HOWELL.

By a peculiar coincidence the type of two-cycle motor illustrated is similar to one of a series of six two-cycle motors prepared for publication in MOTOR AGE last week. This type of motor would be an ideal construction were it not for the fact that to take out the valve requires the removal of both cylinder and piston, and the disconnection of the connecting rod from the piston.

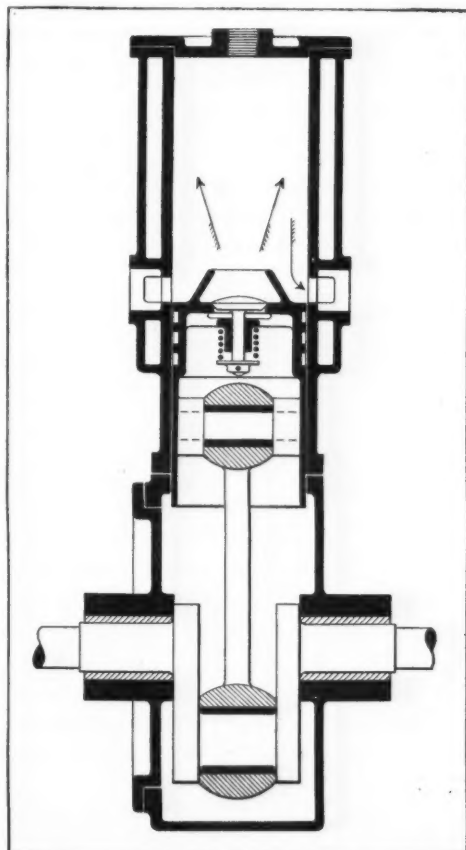
#### NOT SUFFICIENT COMPRESSION

Racine, Wis.—Editor MOTOR AGE—I recently bought a small gasoline automobile motor of  $3\frac{1}{2}$ -inch bore and  $3\frac{1}{2}$ -inch stroke. While the motor runs all right it is not powerful, and does not develop anywhere near the horsepower claimed for it by the maker. The motor seems to have very little compression. I have tested the valves and joints with soap and water and they are all tight. The piston rings also are a good fit and do not leak. The compression space at the end of the cylinder is  $1\frac{1}{4}$  inches, exclusive of the space in the valve chamber. Is not this too much, and if so, how can I remedy it?—W. Rawley.

The compression space in the motor cylinder is entirely too large. For a  $3\frac{1}{2}$ -inch stroke it should not be over  $\frac{1}{2}$  of an inch, if the valves were located in the cylinder head. As constructed the compression space should not be over  $\frac{1}{4}$  of an inch. Have an aluminum plate made  $\frac{1}{2}$  of an inch thick, slightly smaller in diameter than the piston and with screws fasten it to the head of the latter.

#### WRONG WIRING CAUSES TROUBLE

Leavenworth, Kan.—Editor MOTOR AGE—I had a motor bicycle recently built for me, which I cannot get to run satisfactorily. It has a 2-horsepower DeDion engine, Longuemare carbureter, Vesta battery and Dow coil. The compression is good, the spark also seems good, and



MOTOR AGE

Howell's Two-Cycle Motor

I have kept the motor well lubricated, so that I do not believe that the motor heats; but I have great difficulty in getting it to start; in fact, often without avail. The few times I have made it go it has taken me a mile or two from home when unluckily I was stopped, and then I could not get another explosion, so that I have had to wheel the machine back. The battery has been well charged. I thought at once time that it was the inlet valve that was wrong, as when I took it out it seemed as if it was stuck with lubricating oil, but I washed the cylinder out well with kerosene and then put in two new charges of lubricant, and started it on the stand, after which I took it out. The motor started in good shape, but finding my belt slack, I got off to tighten it, and, on getting on again, I could not get the motor to run. I had only gone about 200 yards in all. Is the motor wired properly—or what is the trouble?—E. G.

There must be a mistake in the wiring connections and the trembler contact screw has

probably been connected to the frame. This must be disconnected and a wire taken to the handle bar switch, and no part of the primary circuit connected to the frame; otherwise there will be a spark from the trembler blade to the cam. This throws the trembler contact out of action. The amount of lubricating oil used was far too much, and doubtless caused the inlet valve to stick and foul the plug.

#### HOT TUBE IGNITION

East Chicago, Ind.—Editor MOTOR AGE—I am having trouble with my ignition, but probably no more than many other average users. I am thinking of trying a hot tube. Can it be put on an automobile, and if not, why? If you will answer the above question through the columns of MOTOR AGE it may be the cause of the development of the hot tube, if this has not already been accomplished.—B. B. Wickey.

The hot tube was used extensively on automobiles of European make, before the development of the electric form of ignition. It has

several disadvantages. First, the length of time required to get the tube hot before starting the motor; second, lack of flexibility of motor speed. With electric ignition the motor speed can be regulated by two methods, that of throttling the charge and by changing the time of ignition.

#### CHARGING FROM 225-VOLT CIRCUIT

Detroit, Mich.—Editor MOTOR AGE—Is it practical to charge a two or three cell storage battery from a 225-volt light circuit, and how should it be done?—M. K.

Put two 110-volt, 16-candlepower lamps in series with the battery, testing the polarity of the battery, however, before connecting in the light circuit. This is done by touching one of the light circuit wires to one terminal of the battery, with the other one connected to the other terminal. If it sparks brightly it is in series and should be reversed to get like poles opposed.

## WHAT SHALL I DO TO START MY CAR?

A gasoline motor will usually start best with the air inlet partially closed so that the gasoline is more readily vaporized. If a float feed carbureter is used a small plunger or "tickler" should be provided to allow a small quantity of gasoline to reach the jet or nozzle, before starting the motor. If a mixing valve is employed instead of a float feed carbureter the valve stem should be held up for a few seconds until gasoline is seen to flow. When the battery is switched on and the ignition properly retarded to avoid back firing, a few turns of the starting crank should then suffice to set the motor going. If it fails to start, the trouble will generally lie in one of the following sources: Ignition, carburation, compression, or defective motor mechanism.

#### IGNITION

Remove the spark plug and ascertain if the platinum points are the proper distance apart—about 1-32 of an inch is ordinarily the right distance. See that the insulation of the center terminal is clean and free from soot and oil. Next lay the plug on some part of the frame or motor, taking care that the insulated terminal does not touch it; turn the crank so that the commutator completes the battery circuit, and then notice if the plug sparks. If it does not something may be the matter with the vibrator of the coil. If a plain jump spark coil is used, examine the trembler operated by the cam on the secondary shaft, within the ignition case. If the plug still refuses to work, either the battery is run down or there is a short circuit in the wiring, or more probably a broken or a disconnected wire or a loose terminal screw. If all these points are found in good condition the trouble must lie elsewhere in one of the other three sources.

#### CARBURATION

In the carburation or proper proportioning of gasoline and air there will be found a number of things which mitigate against a perfect explosive mixture reaching the motor cylinder. They are: Improper mixture of gasoline and air; too much gasoline in carbureter; gasoline not feeding properly to the carbureter; cold, damp or foggy weather; stale gasoline; starting crank not turned fast enough.

To find out if the trouble lies in the mixture the combination of air and gasoline should be varied in every possible manner. If there is

a possibility of too much gasoline being in the carbureter, shut off the gasoline supply entirely and turn the motor over a few times until an explosion occurs, then turn on the gasoline again a little at a time until the proper mixture is obtained. Supposing the fault to lie in an insufficient or no supply of gasoline to the carbureter—if of the float feed type—remove the cap at the bottom of the jet chamber and run a small wire up through the nozzle. If no gasoline flows see if the gasoline tank is empty, or the cock between the tank and carbureter shut off. If a mixing valve is used, lift the valve off its seat and with a bent wire clean out the small hole in the seat.

If the weather be cold or foggy, pour boiling water over the carbureter and the inlet pipe to the motor cylinder. Do not under any circumstances start a bonfire to remedy the trouble—or you will be sorry. Should the weather be extremely cold, wrap cloths around the carbureter and inlet pipe before pouring the boiling water over it. Should the car have been standing for some time in the house, the gasoline will lose its strength and become stale, if any remain in the carbureter. A good plan is always to drain off the stale gasoline from the carbureter before starting the motor. The gasoline in the tank may also become stale if the car has stood for several days without use. The gasoline in the tank should be drawn out and mixed with some fresh gasoline.

One point to be remembered above all others in starting the motor is that a few quick turns of the crank will do more to start the motor than 5 minutes of slow turning.

#### COMPRESSION

If the motor still refuses to start the next thing to investigate is the compression. The compression may be said to be the vital point of an automobile gasoline motor. If the motor is in proper working order a considerable effort should be required on each alternate revolution of the motor to carry the starting crank around. If there is any leakage in the cylinder, due to non-fitting piston rings, a hissing will be heard in the crank chamber after the motor has been turned over the compression and held on the dead center. The exact location of a leak at the cylinder head or valve chamber flanges may be determined by the use of soap and water or a little lubricating oil, through which bubbles will arise.

Next examine the exhaust and inlet valves. If they are warm and show depressions remove them from their seats and regrind against their seats with tripoli and water, turning the valves with a screw driver. On no account use oil and emery powder as this can only be used successfully by a machinist in the shop. If the valves are all right, inspect the valve springs. They may have become weak or possibly broken and if so they must be replaced. In getting new springs insist on having oil tempered steel springs. They are only a trifle more expensive than others and will last three or four times as long.

Should the motor seem to have undue compression or turn extraordinarily hard, it is probable that the lubricating oil has dried on the cylinder walls and piston. A dose of kerosene should be injected into the cylinder, the motor then turned over a dozen or more times, and finally the cylinder thoroughly washed out with gasoline, the turning being repeated during the process. If the inlet valve should have stuck on its seat—as it sometimes does—from the excessive use of lubricating oil in the cylinder, and the car has stood long enough for the motor to become cold, the use of kerosene will relieve this trouble also.

The ignition mechanism is one of the first things to be inspected. Possibly there is a broken trembler spring, or the platinum points of the contact breaker may be corroded and require cleaning; also oil sometimes gets on the platinum points and produces a short circuit. A broken valve stem or a misplaced or broken split pin, causing a nut to work loose, may be the cause of the trouble. The two-to-one valve gearing may have been taken out and improperly replaced; or the cam or commutator may be incorrectly timed from the same reason. The inlet pipe may be broken or a union or flange coupling have worked loose, allowing the motor to take in air without it passing through the carbureter. The insulation of the spark plug has been known to crack and a piece lodge under one of the valves, thereby causing endless delay before discovered. Sometimes the cock between the gasoline tank and the carbureter will jar shut. The best safeguard against such an accident is to use a small square stem cock to be operated with a wrench, or a globe valve, instead of the common tee or ell handled cock.



## SALES SECONDARY TO PRODUCTION

### Cleveland Companies Readily Dispose of Their Outputs—New Electric May Be Introduced—Presses for Stamping Bonnets

Cleveland, O., March 9—A. L. Moore, president of the Cleveland Automobile Co., says that his concern is one of the very few in this country that have not sold their outputs for the season, according to current reports. Mr. Moore's company has gone slowly about closing agencies for the season, preferring to secure only one of the best in each town. The result is that in a number of leading cities, among them Cleveland, the company has no representation. The concerns that have taken the Cleveland car, however, are some of the most prominent in the country, and the indications are that they will be able to handle about all the cars that can be produced. The company now has its production on a systematic basis and cars are coming through with regularity.

#### BAKER ENLARGES

The Baker Motor Vehicle Co. is one of those suffering from the complaint of too much business. According to Mr. Goss it would be satisfied if it did not take another order for a couple of months. The demand for the Baker is from all over the world. The company had planned to bring out a couple of new patterns for the season of 1903, but after returning from the shows it decided to let well enough alone and turn all its energy to building the styles which have proven so popular. The company is rearranging its shop and installing new machinery to increase the output.

The American Motor Car Co. regrets that it did not carry out its original plan of erecting a large factory to take care of this season's business. A year ago when the company entered its unique establishment on East Prospect street it was with a view to making experiments and then moving into a large factory. The location proved so pleasant that it was decided to increase the facilities at hand and remain there for another season, with the result that the output is necessarily limited. However, the company is arranging to have a large amount of work done outside, under its own supervision. The company's electric storage battery, which was introduced last year, has been thoroughly tested during the past few months in an electric vehicle of special design, and it has proven so efficient that an electric car equipped with it may be placed on the market.

#### PRESSES FOR AUTOMOBILE WORK

The Reserve Press Co., manufacturer of heavy punches and presses, has lately taken several orders for presses to be used for automobile work. It is furnishing the Hayes & Wilson Mfg. Co. with presses designed for stamping sheet metal fenders. Similar presses have been sold to the Ray Automatic Machinery Co., of this city, which also makes fenders. The latter company is planning to stamp in one piece the metallic hoods which it has introduced to the trade. This would be one of the largest stampings ever attempted for automobile work and would require a heavy press.

The Hansen Car Co. of this city has been incorporated with \$25,000 capital stock by G. A. Gaston, R. Hansen, M. L. Thompson, F. H. Gould and C. K. Fauver. The company succeeds the body manufacturing business heretofore

conducted by R. Hansen, president of the General Automobile & Mfg. Co., reference to whose business was made in a recent issue of MOTOR AGE. Heretofore the company has occupied a portion of the factory of the Victor Electric Works, but it was found necessary, owing to the growth of the demand for automobile bodies, to enlarge the factory and form a corporation. The new factory on Perkins avenue has 25,000 square feet of floor space and the company has received enough large orders to keep it busy for some time. It is the intention to manufacture street car as well as automobile bodies.

Foster & Co., whose establishment is located in the Y. M. C. A. building, have arranged for the local agency for the Peerless and are now showing one of the latest models.

#### COMBINATION STORE AT NEWPORT

The Westchester Automobile Co., whose principal establishment is at 523 Fifth avenue, New York, will on May 1 open an automobile salesroom and storage station at Newport, R. I. It is the intention to reserve one side of the building for the storage of new demonstrating cars which are used by manufacturers and their agents in making sales. There are for this purpose ten spaces, each 10 by 13 feet, three of which have been already sold. They may be rented either by the month or for the season of 6 months.

#### LARGE GARAGE AT PROVIDENCE

A new automobile storage station, one of the largest garages in New England, is to be erected at Providence, R. I. It will be a two-story structure 40 by 100 feet, with entrances on two streets. The offices and store room for repair parts and the repair shop will be in front, with the general storing room in the rear. When this building is finished Providence will have three exclusive automobile stations. The garage will be under the management of Nelson S. Davis.

#### SPAULDING PLANT PURCHASED

The Morlock Automobile Mfg. Co., of Buffalo, N. Y., has purchased the entire plant until recently operated by the Spaulding Automobile & Motor Co., which failed a few weeks ago. The new concern intends to manufacture a light gasoline runabout. Nelson P. Baker, who was identified with the Spaulding company, has joined the forces of its successor.

#### ANOTHER FACTORY ENLARGEMENT

The Jones-Corbin Co., of Philadelphia, Pa., will next week move its factory to 1432 and 1434 North Sixth street, but the offices will remain at 304 North Broad street. The new car which the company is making has a considerably larger body than that shown on the vehicle exhibited at the automobile shows. The seats are wider and a detachable tonneau can be added.

#### TROUBLE ON THE COAST

The Universal Automobile Co., of San Francisco, Cal., is in trouble, the financial constituent of the concern being at loggerheads with the originator. The company has been in the courts in one way or another several times, the difficulties generally being disputes among the members.

The Toledo Motor Car Co. is erecting a three-story garage at Toledo, O. It is extensive and well appointed.

## OPENS WITH A BLAZE OF GLORY

### Automobile Parade Which Accompanies Opening of Berlin Automobile Show a Gorgeous Affair—Royalty Out in Full Force

Berlin, Germany, March 7 —[Cable]—Four acres of automobiles, massed in ranks thirty wide and ten deep, this evening saluted Emperor William in the Lustgarten, opposite the old palace. The great square blazed with 1,200 electric headlights, each machine having four of them, while the garden was rimmed with immense cheering crowds. This was the finale of the automobile parade, the opening feature of the Berlin automobile show.

The procession was formed on the race course in the west end and proceeded through the Thiergarten, Brandenburg gate, and Unter den Linden to the palace.

#### NOBILITY IN THE PARADE

The Duke and Duchess of Ratibor were in the foremost car and in others immediately following were Prince and Princess Henry of Pless, the two Counts von Sierstorf, the Prince of Hohenlohe-Oehringen, Count de Talleyrand-Perigord, Count von Thiele-Winckler, a Persian Prince, who is visiting Berlin, and a large company of other distinguished persons, including the managing directors of the automobile factories of Germany.

The Duke of Ratibor, who is president of the Association of German Automobile Clubs, presented the Emperor with an album containing illustrations showing the progress made by the automobile industry. Prince and Princess Henry of Prussia were in the imperial party.

#### THE SHOW IS VISITED

The mass of machines, decorated with flowers and electrical devices, then dissolved and proceeded in order to Charlottenburg, where the automobile exposition had been opened in the afternoon under the patronage of Prince Henry. The Prince, replying to the president of the club, Major General von Becker, said he loved automobiling as a sport and perceived in it also a tremendous industrial and material agency. Prince Henry, accompanied by the Princess, went around the exhibition, examining especially the war department's commissary wagons, powder carts, and heavy transport wagons.

The exhibition is confined to German manufacturers, with the exception of one American exhibit, which is in the name of German agents.

#### APPLY FOR WORLD'S FAIR SPACE

MOTOR AGE has several times pointed out the urgent need of definite action on the part of automobile makers in securing space—free space—at the world's fair to be held in St. Louis next year. The time limit for such action is nearly up. Arrangements having been made whereby the National Association of Automobile Manufacturers will handle the exhibits collectively, individual applications for space must be made to the national association within a few weeks. The next meeting of the executive committee of the association will occur March 18, and it is desirable that it be known at this meeting exactly how much space will be taken by the members of the association. Hence every maker who proposes to exhibit should make application before this date. It should be borne in mind that America's international status hinges more or less on this display.

## FAMILIAR FIGURE LEAVES FOREVER

The Many in Automobiling Who Have Been Identified with Cycling Trade and Sport Mourn Death of W. M. Brewster

Few tasks more difficult, none more painful, fall to the lot of the average man than reference to the death of one of one's oldest and best friends. MOTOR AGE performs a painful duty indeed in advising its readers of the demise of William M. Brewster, which mournful event occurred at New York on Sunday, March 1.

Mr. Brewster had been ailing for several weeks and made a trip through the south in the hope of regaining strength. People who inquired for him at the New York show could learn little, except that he had just returned, apparently without having been greatly benefited by the change. Few had the remotest idea of the serious nature of his complaint. The final outcome was reported to friends in Chicago by his former partner, Robert D. Garden, of Philadelphia. "Poor Brewster," he says, "has forded Lethe's fabled stream and left us forever. He died last Sunday evening. A few friends gathered around him for a brief funeral service on Tuesday, and on Wednesday Mrs. Brewster and her daughter, Dorothy, left New York with the body for Cincinnati, where he will be cremated—that being his wish—and laid with his forefathers in the ancestral plot. I cannot tell you how much I grieve for the loss of our poor old imitable friend. He was indeed 'a fellow of infinite jest and most excellent fancy,' a character rare and unique, and it will be many a day before we will look upon his like again. He had many lovable, genial qualities and was a good friend. I knew him better, I believe, than any one and for 16 years have regarded him with feelings something akin to affection."

### STRONG IN THE L. A. W.

To know Brewster intimately made it a necessity to admire and grow fond of him. There are few men in his class. He was a splendid companion, a wit of the first water, bright in conversation and repartee, generous to a fault and once a friend a friend always.

Many years ago Brewster was a resident of that most hospitable of towns—St. Louis. There he became a rider of the good old ordinary bicycle and, in due course, a man of national reputation. The League of American Wheelmen held one of its early meets in that city and Brewster became the central figure among the workers for its success. The league honored him by electing him its treasurer, a position he held until business cares made it impossible for him to continue the work. From the time he became treasurer he became the Warwick, the king maker of the league. While his interest in the sport lasted no man ever attained the presidency without his assistance.

### ENTERS CYCLE TRADE

Nearly 10 years ago he relinquished his position in St. Louis, where he had long been the representative of the Blue Line, and moved to Philadelphia to enter into a partnership with Robert D. Garden, another good soul. The friendship between the two grew out of a bitter correspondence over a match race between Chicago and St. Louis, the pair conducting the negotiations with acrimonious and punctilious earnestness. It was always afterward a joke among intimate friends to make

reference to the events which brought the two together and to set them explaining that neither meant any offense during the negotiations.

### WITH AMERICAN BICYCLE CO.

The partnership lasted several years and until Brewster was offered the management of the traffic department of the American Bicycle Co., a position he held up to the time of his death.

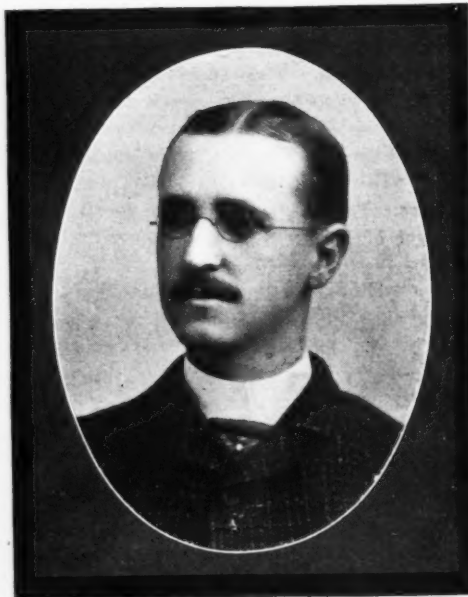
It will be pleasing information to every friend of the deceased that suitable provision was made by him for those he leaves behind, a wife of gentle, affectionate disposition, and a daughter, almost budding into womanhood and possessing all of the splendid qualities of her parents.

## BUSY ON SELDEN PATENT SUIT

Attorneys for Both Electric Vehicle Co. and Smith & Mabley Preparing Their Respective Cases

New York, March 10—Attorneys on both sides in the suit brought by the Electric Vehicle Co. against Smith & Mabley on the Selden patents are busy in the preparation of their cases. Betts, Betts, Sheffield & Betts appear for the plaintiff, and Fletcher, McCutcheon & Brown for the defendants.

Papers were served on Smith & Mabley during the recent automobile show. An attorney of the Electric Vehicle Co. told a MOTOR AGE man at the show that Smith & Mabley were chosen as defendants because they represented several foreign makers and that suit was be-



MOTOR AGE

William M. Brewster

gun at the time owing to the presence of representatives of several European makers in town to give them a chance to make arrangements to join in the defense of the suit. The attorney said that the plaintiff's claim was that European makers had copied the patented points of the engines on automobiles that had been sent to Paris several years ago. The defendants, of course, dispute this.

The plaintiff points to a decision of Judge Cox, of the United States circuit court, overruling the demurrer that the Selden patent was not really a new invention, which was handed down on November 10, 1900.

The defendants assert that the demurrer was not brought as vigorously as it might have been and, of course, dispute the priority of the Selden invention.

## PROVES TO BE A RETAIL CONCERN

Heavily Capitalized Mercedes Company Will Be Branch of Paris House—General Metropolitan Trade News

New York, March 8—It turns out that the Mercedes Co., the announcement of whose incorporation at Albany, with a capital of \$2,700,000, caused much wondering comment, represents the American rights and interests of C. L. Charley, of Paris, and his associates. M. Charley will be general manager with headquarters in Paris and M. L. Rothschild will be the manager of the garage and sales room the company will establish in this city. The company claims the exclusive right to establish Mercedes agencies in this country.

### CHAUFFEURS ORGANIZING

The chauffeurs and mechanics are to have another meeting on Sunday in furtherance of the formation of a union. At a secret meeting last Sunday a preliminary organization was effected and temporary officers were elected. Those who attend will talk little, but say only competent chauffeurs and mechanics will be admitted to the union, and deny the union has anything to do with a demand on the garage keepers for commissions on storage, repairs and supplies.

### BUILDING HEAVY CARS

Several high powered racing cars are in course of construction in New York and in addition to the one being built for H. S. Harkness, S. B. Bowman and the United States Long Distance Automobile Co., are building one each and at another shop one is being made for W. N. Murray, a young Pittsburgh millionaire.

### CAR FOR THE ARMY

The United States Long Distance Automobile Co. is building a four-cylinder artillery automobile tender to serve as a sort of peripatetic tool and repair shop in that branch of the army service.

E. J. Willis, dealer in automobiles and sundries at 8 Park place, has established an uptown branch at 1172 Fifth avenue, near Ninety-eighth street, with storage and sales conveniences.

### EXTREMELY CHEAP TRANSPORTATION

In a recent test with a Serpollet steam omnibus of 20-horsepower, an average load of twelve passengers, making a total weight of 7,040 pounds, covered a regular daily trip of 62 miles in 3 hours and 26 minutes, or at an average of 18½ miles per hour. The total consumption of fuel was 118 pints, or 1.9 pints per ton-mile. The cost of the fuel was \$3.36, making a per passenger cost for the 62 miles of 28 cents, or less than a half-cent per mile.

### DEVELOPMENT AT SYRACUSE

Syracuse, N. Y., March 7—A four-story building opposite the present building of the Century Motor Vehicle Co., has been taken by that company to accommodate its increasing needs. It will be used for the general offices, assembling and finishing departments. The present quarters will be remodeled, over \$6,000 worth of machinery installed and be confined to the machinery department. Next month the company expects to turn out over fifty cars.

The John S. Leggett Mfg. Co., of this city, is preparing to make a four-cylinder car which will list at \$1,600. The engine will be mount-



ed transversely in front, under a hood, and the car will have individual front seats with a detachable tonneau. It will develop 10-horsepower, have wheel steer and three speeds forward and reverse.

The Stearns Carriage Co. is working on a four-cylinder, air-cooled motor car, the first one of which it is said will be ready in a few weeks.

### SEVERAL NEW CHICAGO AGENCIES

Dealers Preparing for Banner Year—Many Cars Represented—Steam Boiler and Burner Consolidation

Chicago, March 11—Agencies are thickening in Chicago and all agents are arranging for a rushing season. Among the latest agencies to be established is that of the Conrad cars in the Wabash avenue salesroom for Truscott launches. Charles P. Root, who has handled the boats here for some time, having taken hold of the Buffalo cars.

The Chicago Motor Vehicle Co., best known as the maker of the automobile coaches operated in Chicago, has taken the agency for the Pierce Motorette and the Arrow motor car.

The Mead Cycle Co. has enlarged its ground floor salesroom and converted it into an extensive automobile salesroom. The line now includes the Murray, Hoffman and the new car made by the National Automobile & Motor Co., of Milwaukee, Wis., and the Thomas Auto-Bi. William De La Fontaine, who has for a year or more been manager of the Chicago branch of the Mobile Co. of America, has accepted the position of manager of the automobile department of the Mead company.

L. H. Grant, who has represented the De Dion-Bouton cars in Chicago for a long time, is preparing to re-popularize this machine in this territory, arrangements having been made with K. A. Skinner, of Boston, the importer, whereby rapid deliveries are assured.

Joseph Libal, Chicago agent for the Duryea, is contemplating the establishment of a downtown show room. He has heretofore conducted the business from the headquarters of his grain trade business, which is not in a desirable location for automobile selling.

The Barton Boiler Co., 4230 State street, has taken over the business of the Studebaker-Burnell Mfg. Co. and now Barton flash boilers will be equipped regularly with Studebaker-Burnell burners and generators for either kerosene or gasoline.

Ralph Temple, he of the Ralph Temple and Austrian Co., is happy over his new catalogue. It is a cold day when Temple is not happy over something. His book is a large one containing illustrations and descriptions of all of the cars in the lines represented by the company.

### DARRACQS AT BOSTON

At the Boston show which opens next week the American Darracq Automobile Co. will occupy several spaces and exhibit the Darracq chassis which attracted so much attention at the New York and Chicago shows; a 9 and 12-horsepower touring car and Cleveland roadster and touring cars. Mr. Charles Cooke, of the company, is at present touring in California.

In 1894 there were thirty-four automobiles produced in France. It is said that during 1902 23,200 cars were turned out by the different French makers. At this rate it will not take many years to reach the million mark.

## GENERAL ACTIVITY IS IN DETROIT

### He Visits Factories and Retail Establishments—Cadillac, Olds and Northern Companies—Preparing for Rapid Deliveries

Detroit, Mich., March 9—The name and fame of the Cadillac are to be carried to California. William E. Metzger has made arrangements with C. M. Lee, of Detroit, to represent the car, and the Cadillac Co. of the Pacific will be established, with headquarters in Frisco. Mr. Lee has been a successful dry goods merchant for the last 10 years, but commenced to study the automobile business as a commercial proposition 2 years ago. He will also handle other cars, at higher prices.

#### FACTORY BEING ENLARGED

Sample cars were shipped to the New York, Chicago and St. Louis agencies of the Cadillac last Saturday. Great activity prevails at the factory and at the Leland & Falconer works, where the motors are being made. There is every indication that shipments will commence in earnest in the near future. A dozen vehicles were going through the assembling room today, several of them being nearly complete. The agencies now established give promise of taking practically the whole output of the season.

Facilities are to be greatly increased. A new factory, alongside the old one, about 50 by 125 feet, two stories high, is well under way. The builders believe the lower floor will be ready for machinery within a week.

#### NEW SALESROOM ESTABLISHED

Metzger has three Wintons only for sale out of his season's allotment. Seven have been disposed of in Detroit and two in other parts of the state.

W. C. Rands, who has taken the Oldsmobile agency, is making preparations to give it thorough representation. He has secured, on Jefferson avenue, a block from Metzger's corner, a six-story building, about 50 by 100 feet, with lofty ceilings, massive interior fittings and an elevator large enough for any car. He expects to use the lower floor for the storage of customers' machines and the second for a salesroom.

#### TO SHIP TWENTY A DAY

Shipments at the Olds plant have doubled this week and are expected to double again two weeks hence. The number is expected to reach twenty a day by that time. The Olds company will shortly introduce one or two improvements. It is the policy of the house to make such improvements as may be developed as promptly as its manufacturing plans will permit, instead of waiting until the end of a year, changing models with the season, and so lowering the value of older models.

The Northern people have assumed an air of pleased expectancy due to the fact that shipments to the number of five a day will commence next week.

### MOTOR TRANSFER FOR CHICAGO

The Merchants' Auto-Transfer Co., of Chicago, has been organized and incorporated, with a capital stock of \$1,000,000, under the laws of South Dakota. Its object is to transfer freight in Chicago from one depot to another and to deliver to the merchants their goods which they cannot get quickly now on account of the congested condition of affairs. The officers of the new company are: Presi-

dent, Josiah Cratty; vice-president, Charles L. Linquist; secretary, W. S. Williams; treasurer, Parker H. Sercombe. Frank B. Smith, traffic manager for Alfred H. Post & Co., is the promoter, and in speaking of the plan of the company says:

"It is the purpose to open the freight houses at night and deliver the incoming freight to the merchants' warehouses while the streets are empty. In this way the local merchant will be enabled to open his goods at least 24 hours earlier than he does under present conditions. The delays in receiving freight, the time spent in transferring goods from one depot to another on account of the crowded condition of our streets, and the delay at the freight depots and merchants' warehouses of the crews waiting their turn will be abolished under this plan. The vehicles are to be so constructed as to meet the demands of different classes of commodities to be handled, and to overcome as far as possible the terrible condition of our streets. By unloading the freight at night this will give the railroad companies a great deal more time to clean up their congested yards."

### MISCELLANEOUS TRADE BREVITIES

The German government has appropriated \$75,000 for increasing the automobile service of the army.

The Speed Indicator Co. has been incorporated in New Jersey with a capital of \$100,000. The manufacture of automobile appurtenances is its purpose.

A garage building has been completed for the Worcester Automobile Co., of Worcester, Mass. It is equipped with a compound hydraulic elevator.

The Cincinnati Motor Co., of Cincinnati, O., has increased its capital stock from \$50,000 to \$250,000, and has decided to erect a new and larger factory.

The Hartford Motor Vehicle Co., of Hartford, Conn., has been incorporated with a capital stock of \$50,000. Its purpose is to manufacture automobiles.

The Cleaver Motor & Vehicle Co., of Fond du Lac, Wis., has been incorporated to manufacture automobiles. The capital is \$20,000 and a light gasoline runabout will be made.

The Philadelphia Automobile Co., of Philadelphia, Pa., has been incorporated with a capital of \$50,000. The incorporators are E. E. Ziegler, E. L. Hoffman, T. J. Mahoney, R. H. Pfaffelder and W. Vees.

Several railway men of Atlanta, Ga., are planning to establish an electric truck and transfer service in that city. For the purpose the Union Station Transfer Co. is being organized.

H. E. Walton, who has been for some time associated with the Peerless Motor Car Co., of Cleveland, O., as purchasing agent, has left that company to join the staff of the Shelby Motor Car Co., of Shelby, O.

Alfred W. Norris has established an automobile salesroom and repair shop at Saginaw, Mich. The line of cars for which he is agent includes the Oldsmobile, General, Knox, Autocar and Packard and the Columbia and Centaur electrics.

Shippey Bros., of London, exhibited at the recent London shows all manner of American automobiles and appurtenances and parts. Among the automobiles handled by them are the cars of the International Motor Car Co., and of the St. Louis Motor Carriage Co.

## SELECTIONS FROM CURRENT PATENTS



## RECIPROCATING CYLINDER

Letters patent No. 721,872, dated March 3—Anton Evensen, of Chicago, Ill.; assignor of one-half to Charles R. Hannan, of Council Bluffs, Ia.—In this motor the piston and cylinder reciprocate in opposite directions, both being attached by the usual piston rod and wrist pin connections to oppositely extending cranks secured to a main shaft. A compression cylinder and a piston are in operative connection with the main cylinder and a suitable fuel supply chamber or tank, and the compressed carbureted air is led from it to a compression coil or chamber. From this it is discharged through a valve into the main cylinder, the valve being automatically controlled by a governing device upon the main shaft through connecting tappets, rods, and rock arms.

At the explosion of the charge the expansion of the ignited gases forces the cylinder head and piston head apart, thereby imparting a rotary motion to the main shaft and the fly wheel through the double armed crank. The fly wheel carries with it in its rotation the governing device, which controls the valve. As the piston and cylinder heads separate still further the uncovering of an auxiliary port in the side of the cylinder affords a way of escape for the waste gases and products of combustion. As the cylinder head and piston approach each other on the return stroke the waste gases are forced out through the exhaust port. Air also freely circulates through the cylinder during a greater part of the cycle and follows the piston head, thereby cooling it and keeping the whole at a working temperature. Coincident with this series of movements the compression piston forces more gas into the compression coil and draws a fresh charge into the compression cylinder. The compression coil preferably surrounds the cylinder, to be warmed by the latter.

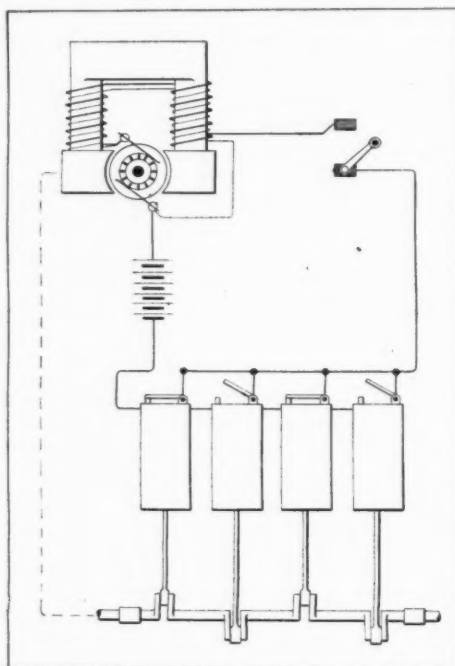
## DYNAMO-BATTERY IGNITION

Letters patent No. 722,176, dated March 3—George W. Euker, of Richmond, Va.; assignor to Edwin O. Meyer, of Richmond, Va.—The aim of the invention is to avoid the use of a sparking coil in an ignition apparatus having both a battery and a dynamo, the former to be used for starting the motor. An additional object is to recharge the battery from the dynamo.

There is a single main circuit in which a dynamo and battery are located, being connected up in reverse order, and in which there are make and break mechanisms for interrupting the circuit to produce the required sparks. The dynamo is preferably compound wound.

When the system is adapted to a multiple cylinder engine the main circuit is provided with a plurality of branches, corresponding in number to the make and break mechanisms, one of the latter being located in each of these branches. The battery is charged previously to connecting in the circuit, and when the engine is started and the switch closed a current will flow from the positive pole of the battery through the positive brush of the

dynamo, through the series windings, and through the make and break device back to the battery as soon as the contact is made between the members of the make and break device. Upon the separation of the make and break members the current is interrupted and a spark formed between the electrodes, the series winding of the dynamo acting as the sparking coil. The current from the battery will thus serve to produce sparking at the electrodes until the dynamo, which is driven from the engine, attains its proper speed, when it will generate not only sufficient cur-



MOTOR AGE

Euker's Ignition System

rent to provide for the formation of the igniting sparks, but also sufficient to charge the battery.

The shunt-winding of the dynamo serves to excite its field and maintain magnetic saturation, while the series winding is so adjusted that when the main circuit is closed at the make and break mechanism the volume of current generated by the dynamo is increased to double the voltage required to form the igniting sparks. In a multiple cylinder apparatus the quantity of current generated by the dynamo is automatically regulated by the operation of the make and break mechanism. There is more or less resistance at the point of contact between the members of each make and break device, and when the members of

only one set are in contact the quantity of current which can pass through the circuit and through the series winding of the dynamo to excite its field is proportionately less than when the members of two or more of the make and break devices simultaneously make contact, and thereby provide additional paths for the passage of the current, and for a greater excitation of the dynamo field and greater generation of current. The larger quantity in the latter case is necessary, as two or more igniting sparks are formed.

## TILTING STEERING COLUMN

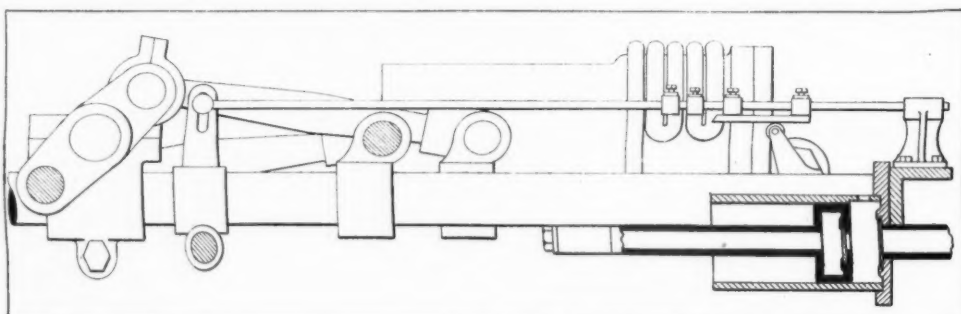
Letters patent No. 721,859, dated March 3—Herbert H. Buffum, of Abington, Mass.—The essential feature of the mechanism is the connection of a wheel steering post with the steering mechanism so that the post may be thrown forward into a vertical position to permit easy access to and egress from the driver's seat, this being accomplished in a manner which includes the power disconnection of the post with the steering mechanism when the former is placed in its vertical position.

The worm for operating the steering links is in a bracket on the front axle and is actuated by an adjustable universal shaft connection from a bevel pinion that normally meshes with a bevel gear on the lower extremity of the steering post. The latter is provided with a forked sleeve which acts as a hinge, allowing the post to be moved forwardly and backwardly. In its extreme forward or vertical position its bevel gear does not engage the pinion, but when it is brought backward to the normal steering position the gear and pinion mesh. The post is secured in the latter position by a foot catch.

## FOR MOTOR WITH ROCKING VALVES

Letters patent No. 721,873, dated March 3—Anton Evensen, of Chicago, Ill.; assignor of one-half to Charles R. Hannan, of Council Bluffs, Ia.—The sparking mechanism which comprises the invention is intended especially for use with a rocking type of inlet valve. The valve casing is in the form of a hollow cylinder extending across the outer face of the cylinder head of the engine, transversely to the line of action of the latter. The casing is bored out to form a slightly tapered bearing or coned valve seat. The valve plug is in the form of a truncated cone, which is fitted to the tapered seat of the casing. The plug is bored and cored out to form exhaust and intake ports for the motor and is actuated by outer mechanism of any suitable kind, so that it rotates on its tapered seat, oscillating back and forth in unison with the piston movement.

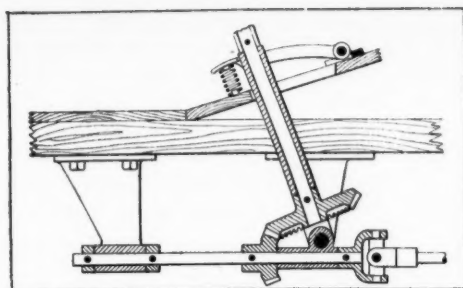
The plug is provided with a valve stem, which has an insulating bushing that extends into it to a point approximately midway between the larger end face and the inner end wall of a central orifice which forms a part of the inlet port. A laterally disposed bush-



MOTOR AGE

EVENSEN'S RECIPROCATING CYLINDER MOTOR





MOTOR AGE

Buffum's Steering Post

ing extends from the inner end of the bushing to a slot in the cylinder head. The latter insulating bushing contains an electrical conductor of any suitable material, which is connected at its inner end with a terminal secured in the bushing by a set-screw. The terminal projects into a slot of the cylinder head throughout the partial revolutions of the plug. The terminal also has intermittent sliding connection with a fixed spring terminal that is secured to the inner face of the cylinder head and over the aperture. It is suitably insulated and has an electrical conductor lead-

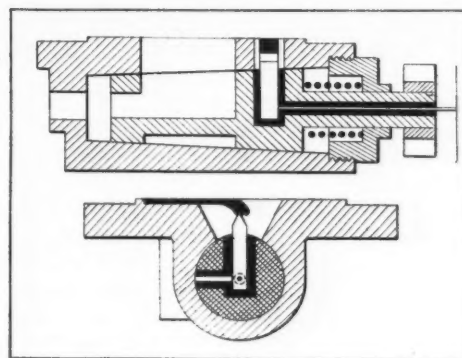
ing from it. The relation and position of the two terminals are such that the oscillation of the valve plug causes them to make and break the igniting circuit at each stroke of the piston, thereby producing the usual spark within the cylinder at the moment required.

#### OTHER PATENTS

Letters patent No. 722,005, dated March 3—Charles E. Duryea, of Peoria, Ill.—now of Reading, Pa.—The patent refers to the well known Duryea ignition mechanism.

Letters patent No. 721,912, dated March 3—James W. Packard and H. William A. Hatcher, of Warren, O.; assignors to the Ohio Automobile Co.—now the Packard Motor Car Co.—of Warren, O.—The patent is for an automobile running gear, referring particularly to the attachment of the radius rods.

Letters patent No. 721,876, dated March 3—Frederick L. Fay, of Holyoke, Mass.; assignor to Samuel M. Green, of Holyoke, Mass.—This invention relates to various points in the construction of a light buckboard type of vehicle driven through a chain by a gasoline motor placed on the platform back of the seat.



MOTOR AGE

Evensen's Sparking Device

Letters patent No. 721,986, dated March 3—Frederick R. White, of Lynn, Mass.—This is a steering mechanism applicable to a single piece front axle with fifth wheel attachment.

Letters patent No. 721,705, dated March 3—Charles W. Hunt, of West New Brighton, N. Y.—This invention comprises a system of three trucks for use in the construction of automobile vans and intended to facilitate the turning of the car and its general handling.

## ONE CONCEPTION OF THE IDEAL LIGHT AUTOMOBILE

Chicago, Ill.—Editor MOTOR AGE—My conception of the ideal light gasoline automobile is shown by the accompanying drawing. It should have a 5-horsepower single cylinder motor for two passenger construction and an 8-horsepower double cylinder motor for four passenger construction, in either case the motor being in front under a bonnet.

#### THE RUNNING GEAR

The frame for either the two or four passenger car should be of channel steel or of the new pressed steel construction, with the front axle solid and the rear axle tubular enclosing a live driving shaft. Thirty-two-inch, artillery pattern wood wheels, with 3½-inch detachable tires should be used on either car. Springs of the usual semi-elliptic type carried on brackets at one end and links at the other should support the frame.

The motor is water cooled, the single cylinder motor being vertical, and the two-cylinder motor has its cylinders at an angle of 60 degrees to each other, the two pistons working on one crank, with a common crank chamber. The motor should have two inside fly wheels and one external one of large diameter and the lightest weight possible. The latter should contain a cone friction clutch to transmit the power to the speed change gear case, which is of aluminoid.

#### THE TRANSMISSION

The gear case is carried upon two angles, bracing the frame just beneath the seat, and contains sliding gears to give two speeds forward and reverse for the two passenger car, and three speeds and reverse for the four passenger car, the drive from the gear case being by a longitudinal shaft to the live rear axle, with radius rods running from the cross-braces to the axle. The gear case is to be readily detachable. All bearings should be plain, with lubricating rings running in oil boxes of ample dimensions, while sight feed lubricators on the dash board should supply the crank chamber.

The clutch mechanism should be adjustable and operated by the left pedal, the right pedal controlling a brake on the driving shaft. Three

brakes are used, all of them being of the double acting type and of large diameter, provided with adjustment.

#### JUMP SPARK IGNITION

The ignition is of the jump spark type, the batteries, coil and contact breaker being under one case on the dashboard, which necessitates only one wire—the sparking plug wire going to the motor, the rest being under the observation of the operator. The speed change lever is fitted with a device to automatically withdraw the clutch before a change of speed is made. The ordinary type of starting crank is used. The withdrawal of the clutch by the pedal will throttle the motor, and the return of the clutch by either the speed change lever or the pedal will open the throttle.

The rear of the two passenger body, surrounded by a railing, forms a platform for baggage, which can be obtained in the four passenger car by removing the tonneau.

#### SEVERAL CONVENIENCES

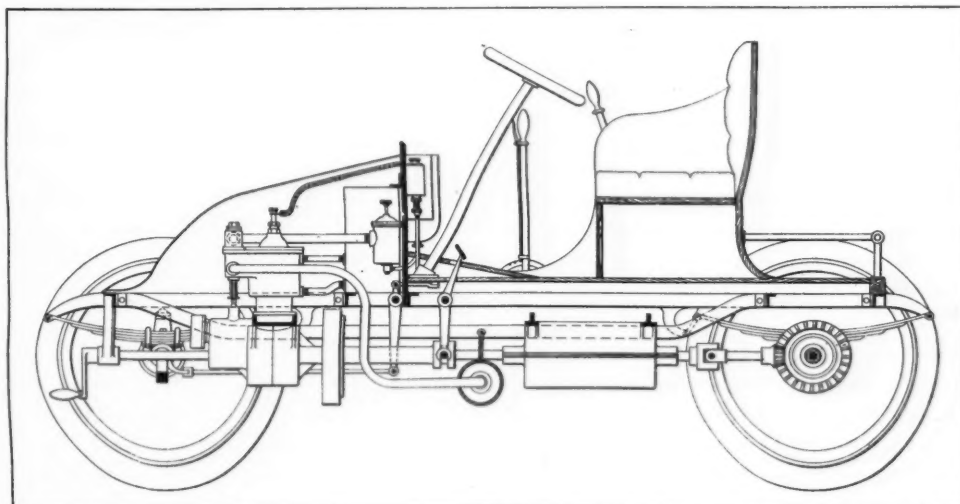
At the first horizontal bend of the lubricating oil pipe leading to the crank chamber, a spring controlled check valve should be located to obviate back pressure on the sight feed, and also prevent any great loss of oil in case of failure to shut off the sight feed when the

car is not in use. The gasoline tank is located in the rear of the dash and the water tank directly in front of it and under the motor bonnet. The carburetor is also attached to the front side of the dash. Horizontal air cooling tubes are provided in the water tank, which is set about 1 inch away from the front of the dash to provide means for the air to circulate from the front to the rear of the water tank through the cooling tubes. With this construction no pump or radiating coils are needed. Other conveniences are the use of thumb nuts on the valve chamber flanges and other parts which have to be frequently examined; the employment of large inspection covers on the crank chamber and gear case—these covers also being held in place by thumb nuts; the fitting of drain cocks to the gasoline tank, crank chamber and gear case; and an oil-tight gear case.

#### A DOLLAR A POUND

The weight of the two passenger car is about 750 pounds, and the four passenger car about 1,000 pounds. The price of the two passenger car, with 5-horsepower motor should be \$750, and of the four passenger car, with 8-horsepower motor, \$1,000.

The construction should enable the person



MOTOR AGE

IDEAL CAR PROPOSED BY W. E. DELTON

in charge to do all the necessary cleaning of the motor, make minor repairs and replace parts which wear with ease and without tools, and should also be so that all parts are easily accessible. The parts to be especially considered in this connection are the sparking plug, valves, commutator, valve springs, and such other parts of the machine as require either continual or periodical attention. Arrangements should be made to fill all tanks without the necessity of lifting the seat cushions, and the openings should be so constructed that funnels are unnecessary, a screen being placed at the filling points, and so arranged as to be removable for cleaning.—Wilson E. Delton.

### THE CUDELL THAT BRANDES SELLS

German Car of Rational Construction—Is Delivered With Full Kit of Extra Parts and Tools

The Cudell is a German car of recent origin and is being imported by J. C. Brandes, 28 West Thirty-third street, New York. Different from many foreigners brought to the United States it is not high powered or built on strictly racing lines. The model which is being introduced is a 12-horsepower car of standard tonneau and motor front design.

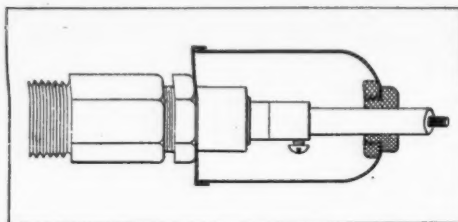
The wooden frame is reinforced with steel flitch plates. The rear axle passes through a steel shell which forms a tight casing for the bevel gears and the differential. The side pressure exerted by the small bevel pinion on the large bevel gear is taken up by a cast-steel roller. The driving axle extends through the tubular axle upon which the rear wheels are mounted, and drives the latter by a key in the external face of the hubs. The front axle consists of a bow-shape piece of forged steel, carrying the steering knuckles.

#### MOTOR AND GOVERNOR

The motor is a two-cylinder, vertical engine, mounted on an angle steel frame together with the speed change gear. The cylinder is 4 by 4½ inches and is cast in one piece with the water jacket and fitted with an aluminum crank casing. The valves are so arranged that they may be removed without touching any of the piping. The centrifugal governor acts on the inlet and is protected by an aluminum cover. The admission of the mixture may also be regulated from the driver's seat by a small pedal, and the governor may be adjusted to maintain any desired motor speed. The ignition system includes a storage battery, induction coil and wipe spark. The sparking device may be readily removed, affording protection against the use of the machine by strangers.

#### THE CONTROL MEDIUMS

The speed change gear is of the sliding one-lever type and furnishes four forward speeds and one reverse. The smallest speed, which is made for especially steep hills, drives the machine at 7 miles an hour. The high speed is said to give 41 to 43 miles an hour on level roads. When the high speed is thrown in no gears are running and the drive is direct from the cone clutch to the driving axle. The friction clutch cone is of aluminum faced with leather. When in action this cone is pressed into the fly wheel clutch by means of a cast steel spring mounted centrally on the prolongation of the motor shaft, and protected from oil and dust. The clutch and speed gears are flexibly connected by a universal joint.



MOTOR AGE

American Covered Plug

The steering column is inclined at an angle of 65 degrees. The hand wheel, which is of large diameter, is of mahogany on an aluminum foundation. The spark lever is on the left hand side and the fuel regulating lever on the right hand side of the steering column, both at convenient heights. A pedal at the left side of the column releases the cone clutch, the one at the right side releases the cone clutch and operates the double-acting block brake on the speed gear. On the extreme right is a third small pedal lever adjusting the motor governor, giving in its lowest position the greatest speed, while in its highest it will bring the motor to a stop. Besides the block brake working on the speed gear there is a side lever hand brake actuating two rear wheel double acting band brakes.

#### REPAIR PARTS FURNISHED

Forward of the driver there is fixed on the dash board an oil tank with four sight-feed lubricators; a hand pump for cleaning the valves with kerosene; the induction coil; and next to the driver's seat a switch for the electric current. Under the driver's seat on the right hand side is the gasoline tank, on the left hand side a tool chest with three drawers, which may be locked and which are divided into compartments containing the following extra parts and tools: Two exhaust valves, complete; one inlet valve, complete; one inlet valve cone with springs; four washers for inlet valves; four spark plugs; six washers for spark plugs; eight washers for water pipes; one contact key; 3½ yards of electric cable; 1 yard of electric cable; one coil of insulating tape in tinfoil; one coil of oiled steel wire; one set of bolts; one set of nuts; one set of split pins; one cold chisel; one center punch; one small spanner; one oil measure; one hand lever for dismounting tires; one large file; one small file; one spanner for spark plugs; one large spanner; one pair of pliers; one screw driver; one hammer; one spanner for wheel oil cups; one tire repair kit; one funnel with sieve; one funnel without sieve; one oil injector; two ordinary oil cans; 20 ounces of cotton waste; cleaning rags; sheet of emery paper; sheet of sand paper; and one box of emery powder.

#### PAYING ATTENTION TO BRAKES

The steering mechanism and the brakes represent two of the most vital parts of an automobile—governing as they do the means of direction and sudden stopping. While it is dangerous to unnecessarily tinker with either of these elements of the machine, they should be watched closely. There should be no delay in remedying failure of power of the brakes or lack of quick, positive action of the steering gear.

Care should be taken that the brakes are always nicely adjusted and that when the brakes are set tightly the foot pedal will not be pressed down to the full limit of its individual movement. This provision against the limited action of the pedal being unequal to the action necessary to set the brake, should

also be applied to the hand brake, if the machine is equipped with one. An occasional inspection of all of the brake connecting links is wise, especially to see that nuts and pins are tight. It is a good plan to secure safety by furnishing nuts which are used for locking purposes and not requiring adjustment, with cotter pins to prevent loosening, and to provide all adjusting nuts with locking nuts.

#### COVERED SPARKING PLUG

The illustration shows the protected sparking plug that is being introduced by the American Coil Co., of West Somerville, Mass. It has a brass shell throughout and is supplied with a brass cover or hood that completely encloses that part of the insulation which extends beyond the shell. The hood is fitted with a hard rubber bushing at its outer end and through this extends a rubber covered flexible wire the cover on which makes a tight joint through the hard rubber bushing. The hood is secured to the plug end flange by a bayonet joint.

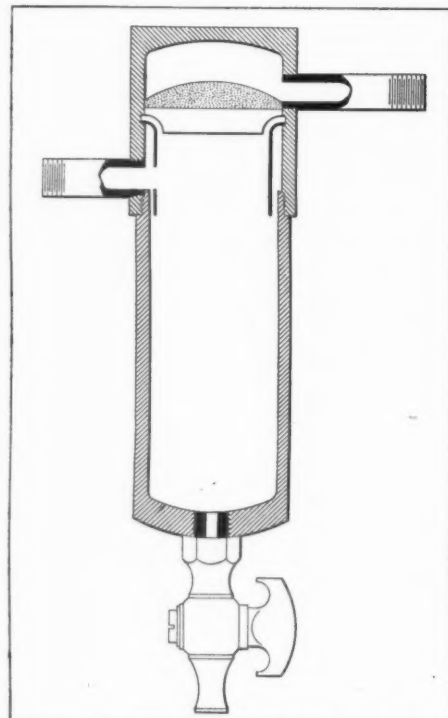
The purpose of the hood is to prevent water or oil from bridging the insulation on the outside of the plug and thereby causing a short circuit. The plug is supplied complete with the rubber covered wire extended out sufficiently long to be ready for connecting up.

#### STRAINER FOR GASOLINE

The Kaufmann gasoline strainer is a device for both steam and gasoline automobiles, being nothing more than its name indicates and suitable for attachment to any kind of car. Its chief utility, however, is on steam cars as a preventive of either water or dirt coming in contact with the burner. It can be readily cleaned and to attach only two pipe connections are necessary. It is manufactured by Charles Kaufmann, of Oshkosh, Wis.

#### COMPACT IGNITION MAGNETO

Cavanaugh & Darley, 30 West Randolph street, Chicago, are introducing the Remy magneto for sparking purposes. It has permanent magnets, square carbon brushes, wick oiling bronze bearings, and wood fiber insulation. It can be run in either direction and at



MOTOR AGE

Kaufmann's Gasoline Strainer



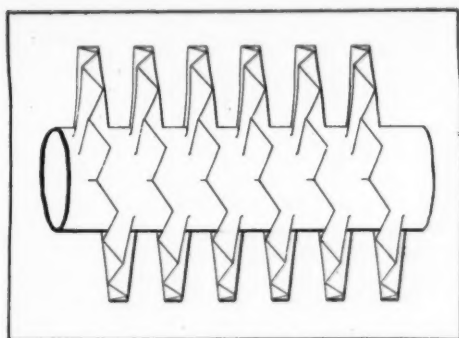
a speed of from 1,000 to 7,000 revolutions per minute, and supplies a voltage of from 5 to 20 and an amperage of from 6 to 12.

#### UNSEASONED LUMBER IN WOOD WHEELS

Occasionally wood wheels of the artillery type become untrue either circumferentially or laterally, or both. This is generally due to the use of unseasoned lumber in the manufacture of the wheels, which are then subject to atmospheric changes. The wheel will expand in wet weather and will contract during dry weather, tending to split apart at the junction of the spokes and the rim, despite the binding effect of the felloe. Whenever a wheel shows signs of weakening through being untrue it should be immediately taken to a competent carriage builder for repairs, as the layman cannot easily attain the knack of retightening and retrueing such wheels, even though he has readily mastered the art of making slight repairs on wire wheels.

#### SPIRALLY RIBBED RADIATOR

The illustration shows a section of radiator, which is the design and production of Frank H. Stolp, 5541 Carpenter street, Chicago. It is a radical departure from ordinary construction only in that the radiating ribs are formed in a continuous spiral around the central tube. By means of a special machine a long band of sheet copper is wound edgewise around the tube and at the same time it is crimped, or corrugated, on a bevel in order to



produce the spiral. Thus the single operation serves the double purpose of creating inexpensive manufacture and affording the maximum amount of radiating surface. The spiral is finally soldered to the tube. By this process the radiator can be made in tube lengths for cutting into any desired lengths, or can be formed on bent tube for continuous coils.

#### KEEP OIL FROM TIRES

One lesson relative to pneumatic tires learned in the bicycle trade is even to a greater extent valuable in the automobiling. This is the effect of oil upon tires, for not only is it more expensive in the one case than in the other on account of the greater cost of the tires, but it is more liable to be produced because of the greater number of parts in an automobile that must be kept well lubricated.

All fatty substances are detrimental, as they act as a solvent upon the rubber. This can be easily proved by rubbing vaseline upon a piece of an old tire. The vaseline will cause the rubber to become spongy, and when dry it will crumble, and can be rubbed into powder by the friction of the hand. It is accordingly important that pneumatic tires should be protected from grease. Care should be taken that no part of the moving mechanism of the car throws oil onto the tires. Extra inner tubes should be placed in rubber cases whenever they are likely to come in contact with oil cans, oily cloths or tools.

#### KEROSENE FOR MOTOR CLEANING

Kerosene is sometimes injected into automobile motor cylinders to clean gummy deposits from the piston and piston rings and to thereby facilitate the running of the engine. It must be remembered, however, that this process leaves a film of oil, even though the major portion of the kerosene is ejected through the exhaust valve. After the motor has been started an unpleasant odor will characterize the exhaust and a deposit of carbon will be left on the piston. When it is necessary to use kerosene to clean the cylinder it should be followed by the injection of a small quantity of gasoline to clean out the residue. The use of kerosene to wash out the crank chamber should also be followed by the injection of gasoline; else kerosene will remain to thin out and cause loss of efficiency of the lubricating oil.

## AN ENGLISHMAN'S VIEW OF THE MOTOR BICYCLE

My experience is that as delivered by the maker the average motor bicycle runs, but not forever. You must first pass through the overhauling stage or trouble era. This "trouble stage" either makes or mars the machine; in fact, if you remedy every fault in such a way that it cannot recur, after 500 miles you have almost doubled the original value of the machine, and thereafter it will never seriously delay you.

#### MANY ADVANTAGES

Having put the motor bicycle in order, here are its advantages: Above all, exquisite simplicity. Next in importance is safety. Thirdly, there is the question of hill climbing and speed. Barring breakdowns, the best motor bicycle may make a better average speed than a car up to five times its price. It is largely due to the easy choice of the best track on the road, whether for surface or for the avoidance of other traffic. It is also ascribable to the ease of tire repair. It is unrivalled in cheapness in every department. It is cheapest to buy. It is cheapest in gasoline and oil. It is cheapest to house and costs little to clean; it requires no chauffeur. Is it not the motor for the man of minute means? For a given speed it raises less dust than any other automobile.

Let us consider why this engaging "younger brother" of the motor car deserves the most earnest and studied encouragement from all motorists, and pre-eminently from the automobile club and affiliated bodies: It increases the places where gasoline and oil are stored. It increases the number of people who understand the explosion engine. It increases the number of fast travelers on the road, and gives the weight of numbers to the whole automobile movement, and removes from the sport the absurd criticism of "rich men's juggernauts." It

increases the chance of road improvement, and affords an opportunity for the study of tires and new devices which may be cheaply tried on a small scale first.

#### SEVERAL DISADVANTAGES

These generalizations are dull, but I will conclude them by epitomizing the drawbacks of the motor-bicycle to avoid being too partial: The rider is exposed to cold and mud, being only 6 inches off the road; it is a lonely pastime; the machine is punished for its accessibility by being exposed to wet and to blows; the rider is not in an armchair; he must dismount if stopped by traffic, and his machine will not stand alone; his carriage is so small and delicate that he is bullied by larger vehicles; he must make violent bodily efforts to start his machine; skidding means bodily injury; his weight of baggage is very restricted; his position is fatiguing; his mount is not compatible with the town clothes required for calling on friends; breakdowns are more frequent than on good cars; the motor is not protected from road shocks by springs; the good running of the motor cannot be tested except when the rider is on it; the exposed position of his calves makes him particularly attractive to large dogs.

I want to accentuate a point which is too much overlooked in most road vehicle design—the extreme importance of surface smoothness, of the absence of unnecessary roughness, projections, straps, clamping pieces, mouldings, levers, ornaments, etc. Owing to the independent manufacture of accessories, almost every detail is an accessory, and seems to be added as an afterthought, so that numberless dust-

catching straps, buckles, bolts, and holdfasts, wires, clamps, exposed electric wires, and gasoline pipes pervade every part of the frame, and the machine is consequently uncleanable. Cycle makers are complacent about the nickel plated glamor which these things give, but nickel plating, which will stand a month in the rain without rust peeping through, is apparently not sought for, and this glamor does not long remain.

#### DESIRABLE SAFEGUARDS

I have skidded so little that I am scarcely competent to indicate the best way to do it. It is generally known that an exhaust valve lifter is indispensable in this connection; but a very delicate carburetter which does not fail to give mild explosions when the throttle is nearly closed, and which in conjunction with mechanical valves will keep the engine running "dead slow," is a useful safeguard against skidding. The next safeguard is a flexible drive. Advantage in this direction will be derived from flywheels being much larger without being heavier. The jerks will be diminished, and as it is the beginning of a slip that must be avoided, every trifle counts. Also, if these larger fly wheels were to rotate in the opposite direction to the road wheels then gyrostatic action would assist the rider in keeping vertical instead of acting in the opposite sense, as they do now. The gyrostatic action would not even then diminish the amount of side pressure on the ground, but it would diminish the amount of slope of the bicycle, and I know from good cyclists that a slip in which the rider and both his wheels take part unanimously is not so disconcerting as one over which they are divided.

A stand is indispensable. Misfires on the road cannot be properly diagnosed without it.

**EDITOR'S NOTE**—This article is a summary of a paper read by Mervyn O'Gorman before the Automobile Club of Great Britain and Ireland.

To watch the machine running and to attempt to hunt for a fault in the carburetter, induction valve spring, ignition wires, etc., while trotting by the side of a motor-bicycle that will not start is one of the most fatiguing and aggravating exercises that I know. It is better to find some cottage and build up. Shameful as it seems to our intelligence as men, as motorists, as sportsmen, or as engineers, the motor-bicycle is abandoning its simplicity for the sake of a meretricious imitation of the car. Take the vertical engine craze. It is a matter of 15-degree slope, and people will re-design and weaken their frames to make this change. The reasons alleged are that the valves work better vertical, and the lubrication is better, and that the weight of the piston is now removed from the side of the cylinder.

#### PROGRESS RETARDED

Three things are retarding the progress of motor-cycle design: There is not enough work done in the engineer's drawing office. The influence of fashion is far too strong, and is only inadequately counterbalanced by cranks and "mania." Ready-made accessories, however good, which must be fitted in hamper and distort the unity of design. Little fads are admirable for us all, because the faddist gives an intensity of study to some excellent detail which results in its perfection. But it is time that an unbiased engineer should mass and collate information and give us first the drawing and then the fact of a well plated 100-pound machine with a moderately narrow thread, full width bottom bracket, strong front forks and pedal cranks, a flexible chain drive, two speeds, a cool 3-horsepower engine—with a third bearing on it—that can take its re-start from the road wheels and be free at will, mechanical valves, replaceable parts, sound and well-protected ignition gear, spring seat and handles if not a spring frame, good brakes, mud guards incorporated in the design, and also gear cases, etc. Let even the accessories be so re-designed that they fall in perfectly with the general scheme.

As a basis of discussion, I should put forward

the following proposals and reasons for a scheme of competition rules: A competition ought to be fair, sporting and useful—the track must be lengthy enough to equalize out the luck and stiff enough to eliminate the weaklings. To be fair, there must be artificial barriers, securing similarity between the competitors. To be useful, the artificial barriers must be few, and, in my opinion, should take the shape of ruling out some objectionable feature, such as excessive weight, rather than limiting a valuable feature like cylinder capacity, though this might be limited. In making a competition useful, a number of minor improvements can be encouraged by requiring the inclusion in the design of luggage carriers, brakes, spring handles, and seats, and good silencers. A preliminary hill test should eliminate all who do not conform to some standard of climbing speed and noiselessness—say the machine shall at 10 miles per hour be inaudible at 100 yards to a blindfolded man on a still day. The competition should be on an average road, including time hills, and to be useful should allow pedalling except on the timed hills, should allow of roadside repairs if possible, because, if they are easily done they imply accessibility, and at present they occupy a very important position in the eye of the public. To be sporting it is necessary to keep in a special class to themselves mechanical monsters, because of their effect in choking off the more useful competitors. Monsters, however, should not be discouraged entirely, they are important experiments, expensive and educational; they show a determination to win, and require some daring to drive.

#### CONDITIONS OF TRIAL

There should be classes, say, up to 100 pounds, up to 150 pounds, and over 150 pounds. One form of eliminating trial which I should like to hear discussed is the following: The competitors' numbers should be reduced to about 25 by having one only of each make or by selection of the judges, or by the hill climb and the silencer test. They should then run 1,000 miles in 8 days, keeping always between a pair of cars to control the maximum and the

minimum speed, the minimum to average 11 miles per hour. Repairs, alterations, etc., may be made en route by the driver only, provided he be not passed by the minimum car, he may therefore pedal, dismount, or push without loss of marks save on the test hills. Refill of gasoline or oil allowed only every 100 miles and measured, the inlet hole being sealed. Special timing of two hills, with special marks for accuracy of declared horsepower, for light weight in relation to power, and hill speed, pedalling not allowed. Maximum weight allowable when loaded, all riders' weights to be equalized, and all to have a luggage carrier to facilitate this.

I introduce the weight limit because hitherto the motor bicycle has unfortunately not been restricted by any accepted standard of desirable weight, and therefore has been no such studied attempt to get the highest weight efficiency as has been the case with cars competing under a definite weight limit—like the automobile club of France, 1,000 kilograms. Some of the pros and cons for cylinder capacity being considered as against a weight limit are: Limiting of cylinder capacity tends to encourage increased motor speeds for given power, so does limiting the weight. Both tend to the disregard of fuel economy. Limiting the weight only tends to turn attention to getting the most work out of a given weight, while limiting the capacity tends to getting the best work from a given volume of cylinder, and favors a two-stroke engine very largely; for I cannot suppose the pump used by such an engine would be measured as "working cylinder," though it might add largely to the weight. Yet the advantage of a two-stroke engine is small if no weight is saved thereby. Limiting the capacity fails to encourage the development of a light vehicle, which is wanted. Limiting the capacity does not tend to saving in weight on the frame, and therefore to a risky type of construction. On the other side, there are always safeguards against these risks, in the fact that nothing would discredit a maker more than a reputation for breaking in half before the end of an 8-day trial.

## BUSINESS LAW POINTS COMPILED FROM RECENT DECISIONS

A partnership is dissolved by the death of one partner, and notice need not be given to third persons. (42 S. E. Rep. 415.)

Evidence merely that a purchaser of goods deposited the price in a bank to the credit of the seller does not show a tender. (70 Pac. Rep. 240.)

A false representation of so trivial a character that it cannot be believed to have affected the buyer's judgment furnishes no ground on which to rescind the sale. (52 Atl. Rep. 1131.)

A contract to purchase personal property is void for want of consideration and mutuality, if the quantity to be bought is conditioned by the will or wants of one of the parties. (117 Fed. Rep. 51.)

A chattel mortgage to be effectual must point out the subject matter of it so that a third person, by its aid, together with the aid of such inquiries as the instrument itself suggests, may identify the property. (90 Mo. App. 8.)

Where the buyer returned the goods purchased to the seller, who refused to accept them, the buyer, under the terms of the contract, having no right to return them, there

could be no recovery of the money paid on the sale. (78 N. Y. S. 156.)

A chattel mortgage to a relative, by which creditors of the grantor are hindered in the collection of their claims, will be scrutinized closely, and will not be sustained unless good faith is clearly proven. (91 N. W. Rep. 50.)

An unconditional acceptance of an offer by wire to furnish certain goods at a price named constitutes a binding contract of sale, though the price named is erroneous, and not the price given by the sender to the telegraph company. (23 O. C. C. 516.)

There is no implied contract on the part of a landlord to repair the roof of his building so as to support a counterclaim to an action for rent set up by the tenant of the basement, whose goods were injured by a leak in the roof. (91 N. W. Rep. 994.)

Where a partner signs a judgment note in the firm name, with the assent of the other partner, or partners, the latter are bound as if they had sealed it themselves, and their assent can be proved by "any of the usual modes of evidence." (20 P. S. C. 549.)

Where an advertisement contract was broken immediately after execution by the adver-

tiser refusing to comply therewith, the amount of damages to be awarded is a question for the jury under all the circumstances disclosed by the evidence. (70 S. W. Rep. 169.)

One who employs another as manager of his business for a positive and definite period cannot be relieved from liability for dismissing him before the expiration of the term on the ground of his financial inability to continue the employment. (4 O. L. R. 350.)

The acceptance of goods by the buyer does not waive the right to return them for breach of warranty, where he had not inspected them, nor had a reasonable opportunity to do so, before such acceptance, nor where the defects were latent and he accepted the goods in ignorance of same. (91 N. W. Rep. 863.)

Where a party conceals a fact material to a transaction and peculiarly within his own knowledge, knowing that the other party acts on the presumption that no such fact exists, it is as much a fraud as if the existence of that fact was expressly denied, or the reverse of it expressly stated. (91 N. W. Rep. 1097.)

An account cannot be proved by the testimony of witnesses that the same is a correct copy of the charges made on the books kept



by her, when she further testifies that she "knew nothing of her own knowledge as to the correctness of the account," and only copied into the book entries given her by another on slips. (42 S. E. Rep. 390.)

When two parties have entered into a written contract for the purchase of goods, neither a countermand of the order for their shipment nor a notice by the purchaser to the seller that he will not accept them is effectual to cause a rescission of the contract, for to that end the consent of the seller is necessary. (42 S. E. 378.)

Where a person in good faith assumes to act as the agent of another, though in fact without authority, the latter on being fully informed of same, must, where his silence might prejudice the assumed agent or innocent third persons, disavow the act within a reasonable time, or his silence will be construed as a ratification. (91 N. W. Rep. 844.)

Where an agreement with a salesman stipulates that it shall terminate without notice if the business of the firm ceases or is interrupted by death, and a member of the firm dies, resulting in the organization of a new firm, which continues the business, such salesman is not entitled to recover for a balance of salary in the absence of evidence showing a renewal of the contract by the new firm. (90 Mo. App. 286.)

Where the seller delivers goods which do not conform to the warranty in the contract of sale, and the buyer for that reason returns or offers to return them, on the failure of the seller to furnish goods conforming to the warranty, the buyer may recover such damages as may reasonably be supposed to have been in contemplation of the parties when the contract was made as the probable consequences of the breach of warranty. (91 N. W. 864.)

#### FROM THE FOUR WINDS

The Brown & Sharpe Mfg. Co., of Providence, R. I., has issued the 1903 edition of its almost proverbial "blue book" of machinery and tools.

Grout Bros., of Orange, Mass., have issued a comprehensive catalogue which presents the advantages of the Grout steam system in a readily comprehensible manner and carefully describes the construction of all of the several patterns of the Grout carriages.

Charles E. Miller, 97 Reade street, New York, who is American agent for the widely known Brampton chains, has received a shipment of these from Brampton Bros., Ltd., of Birmingham, Eng., to fit Panhard cars.

L. P. Mooers, superintendent of the Peerless Motor Car Co., of Cleveland, was arrested last week for driving a Peerless touring car through a railway crossing gate when it was down, probably a better demonstration of nerve and of the power of the Peerless than of caution in vehicle operation.

Recent changes in the personnel of the management of the American Tool Works Co., of Cincinnati, O., have placed the management of the business in the following hands: Franklin Alter, president; Henry Luers, secretary and treasurer; J. B. Doan, general manager; A. E. Robinson, general superintendent. The month of February resulted in next to the largest month's business in the history of the company. The plant is busy in all departments and the outlook for future business is bright. Extensive alterations and improvements are now being made to increase the production.

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"ASK THE MAN WHO OWNS ONE."

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Largest Automobile Store in Chicago

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PRICE \$1250 AND \$1400

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## The Chainless Autocar

The Quietest Touring Car Built

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### MEAD CYCLE COMP'NY

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MURRAY RUNABOUT \$650 with Artillery Wheels.

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NATIONAL GASOLINE TOURING CARS, 2 Cylinder \$1450, 4 Cylinder \$2500

SECOND HANDS OF ALL KINDS.  
DEMONSTRATIONS AT YOUR CONVENIENCE.

FOR SALE HIGH GRADE SECOND HAND  
AUTOMOBILES.  
SEND FOR COMPLETE LIST.  
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FREE MOTOR-CYCLE TO HUSTLING agents; 2-cent stamp gets full particulars. STEFFEY MFG. CO., 2722 Brown st., Philadelphia, Pa.

FOR SALE—Mobile Steam Touring Carriage; will seat four or six; cost \$2,000; guaranteed good as new; need money; must sell at once for cash. If interested, write for price. Address M., care Motor Age. 11

FOR SALE—Cheap—Two steam runabouts and two surreys; new; one a little used and one more so. E. A. Wright, Canton, Ohio. 12

PARTNER WANTED—In automobile business in western city; have agency for the best cars; elegant storage and repair business; an exceptional opportunity for a man with \$5,000, as business will clear investment this season. For particulars address Brooks, care Motor Age. 13

FOR SALE—Automobile in fine condition, almost new. Inquire of W. N. Duncan, care of Union Laundry Co., Albany, N. Y.

WANTED—First class automobile salesman. Day Automobile Co., 318 and 320 E. 11th St., Kansas City, Mo.

FOR SALE—Model A Toledo steam car. Run eight hundred miles. Guaranteed to be good as new. Cost \$900. Sell for \$500. C. R. Johnson, Jr., Madison, Ind. 12

WANTED—Second hand gasoline machine. State how long used, full particulars, lowest price first letter. Raymond P. Lipe, Toledo, O. 12

BARGAIN—New 4-passenger 12 H. P. gasoline auto. Panhard Transmission. Roulet, 107 Washington St. 3-12

FOR SALE—Thomas Motor Cycle; Teen run very little; good as new; tires never punctured. Sell for \$40. W. E. Rudy, Lima, O. 13

FOR SALE—Five H. P. electric motor, bought new last April; made by Chicago Motor Co. Will sell or trade for good gas or gasoline engine. W. E. Rudy, Lima, O. 13

HOMANS—SELF PROPELLED VEHICLES. Price \$4. Other books at bargain prices. F. Jos. Lamb, Grand Rapids, Mich. 12

FOR SALE—1902 Winton phaeton; perfect condition; newly painted; guaranteed. Reason for selling, have purchased 1903 Winton touring car. A. J. Horlick, Racine, Wis. 14

FOR SALE—New touring car, 12 h. p., double cylinder, 4 passenger; type III. Searchmont make; guaranteed perfect; cost \$1,500; will sell at \$800. Automobile, Usona Hotel, St. Louis, Mo. 14

FOR SALE CHEAP—Thomas Tonneau touring car; new; fine condition; a bargain. T. Sherow, Millbrook, N. Y. 14

FOR SALE—Eight horse-power gasoline motors, \$100; castings, \$25. E. H. Clay & Co., Chagrin Falls, Ohio. 14

FOR SALE—The Murray gasoline runabout; the strongest and most powerful light runabout on the market; price \$650; no trouble to demonstrate. We have a great bargain in a new steam runabout of well known make. A fine second-hand Oldsmobile, 1902 model, run only about 300 miles, and practically new, for \$500. Other bargains in gasoline and steam machines from \$150 up. Write for descriptions of bargains or tell us what you want. Mead Cycle Co., 1243 Wabash Ave., Chicago. 14

TWO COLUMBIA WAGONETTES, MARK XI, with two extra sets of batteries, all in fine condition and splendid working order. Originally cost \$5,500. Bargain if sold immediately. Address, James Mills, Newark, Ohio. 14

CAPITAL WANTED—For manufacturing hydrocarbon automobiles, by mechanic with exceptional experience, holding valuable patents; thoroughly tested experimental machines. Investigate. Address N., care Motor Age. 5

WILL sell 1902 Winton Touring Car, perfect condition, absolutely satisfactory, to make stable room for this year's model. Howard Alexander, Elizabeth, N. J. 14

AUTOMOBILE MACHINE SHOP, mfr. of automobile engines and parts; new machines built to order; rebuilding and repairing a specialty; our equipment and workmanship of the best. A. O. WOLWORTH & CO., 1227 Michigan Ave. 14

SECOND-HAND AUTOMOBILES — Toledos, steam, \$550 up. Mobiles and Locomobiles, steam, \$250 up. Spaulding gasoline, \$550. Olds-Columbias, both gasoline and electric, Haynes-Appersons, Fournier-Searchmonts, White's Waverlies, at equally low prices. Send five cents in stamps for our catalogue of second-hand machines. Mississippi Valley Automobile Co., 3927 to 3939 Olive St., St. Louis, Mo.

WANTED—More igniter troubles. We fix them with our improved Sta-Rite spark plug and Sparksee. Detroit Motor Works, Detroit, Mich. 14

SECOND-HAND AUTOMOBILES FOR SALE—Clearing out for spring stock. Electric Vehicle Co., 1421 Michigan Ave., Chicago. 7

FOR SALE—New Toledo, Model A carriage, cost \$900. Never used. Will sell for \$550. Box 370, Harrisburg, Pa. 14

FOR SALE—1902 Winton touring car, guaranteed in first class condition. Reason for selling, have purchased 1903 Winton. Dr. Perry Schurtz, Grand Rapids, Mich. 14

FOR SALE Largest Stock in the U. S., all kinds of Automobiles.  
GET OUR CATALOG.  
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A large Automobile Manufacturing Business for sale, with books filled with bona fide orders; reason for selling have other large business which requires our entire attention. Address Red Cross, care of Motor Age.

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For General Appearance, Style and Finish

A quiet running motor with a perfect throttling device. A three speed transmission that is right, and all parts easy of access for all adjustments. The arrangement of attachments on the dash and controls at the steering wheel also found favor with all. The new Radiator with tanks for 200 miles running is a step in advance. Think it over seriously. IT IS THE CAR TO BUY.

THE F. B. STEARNS CO., Cleveland, O.

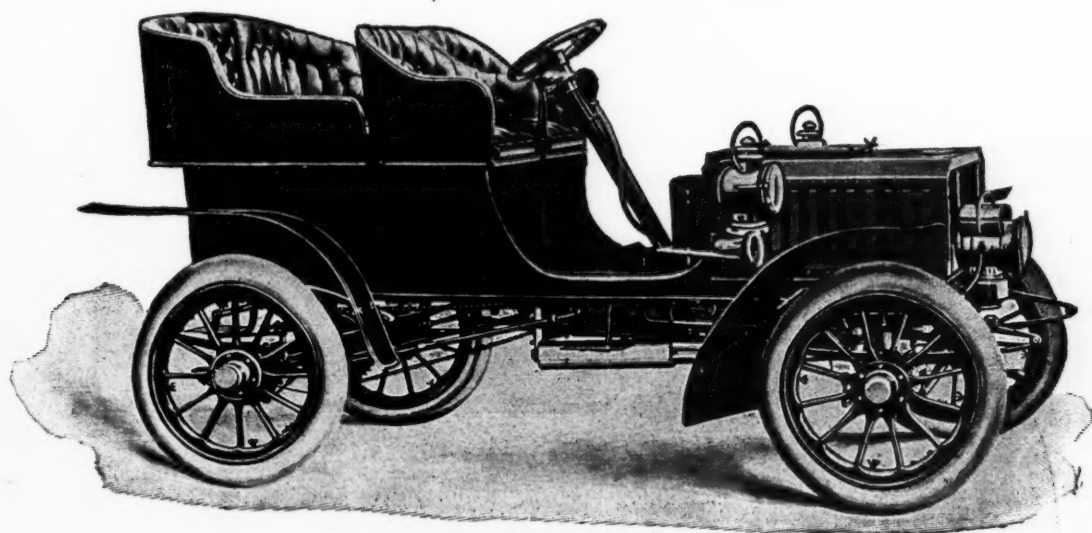
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CONRAD GASOLINE TOURING CAR

**\$1,250**

Twelve Horse-  
power Vertical  
Double Cylinder  
Engine in Front.



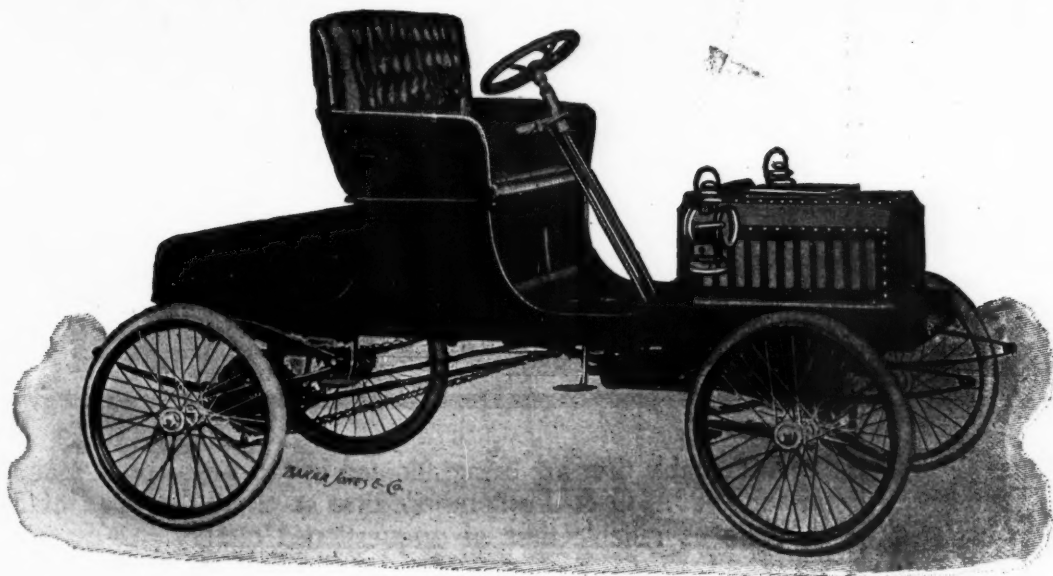
Sliding Gear  
Transmission  
Three Speeds  
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and Reverse.  
Wheel Steering

**\$750**

Eight Horse-  
power Vertical  
Double Cylinder  
Engine in Front.



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Make the most practical and satisfactory automobile equipment. They will stand hard service; are resilient and speedy; easily repaired if punctured—and they don't puncture easily.



Detachable tires are being adopted by all automobile makers for 1903. G & J automobile tires stand at the head of the class as reliable tires of unquestioned quality.

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ARROW MOTOR CAR

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Built to Run All the Time!

A small car that is as strong and capable of rough, hard usage as a large car. It never fails.

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Includes all the latest improvements in Moderate Speed, Moderate Weight, and Moderate Price Tonneau Models.

SIMPLE IN OPERATION, UNEQUALLED IN WORKMANSHIP AND FINISH, ELEGANT IN DESIGN.

THE GEORGE N. PIERCE CO. Makers,  
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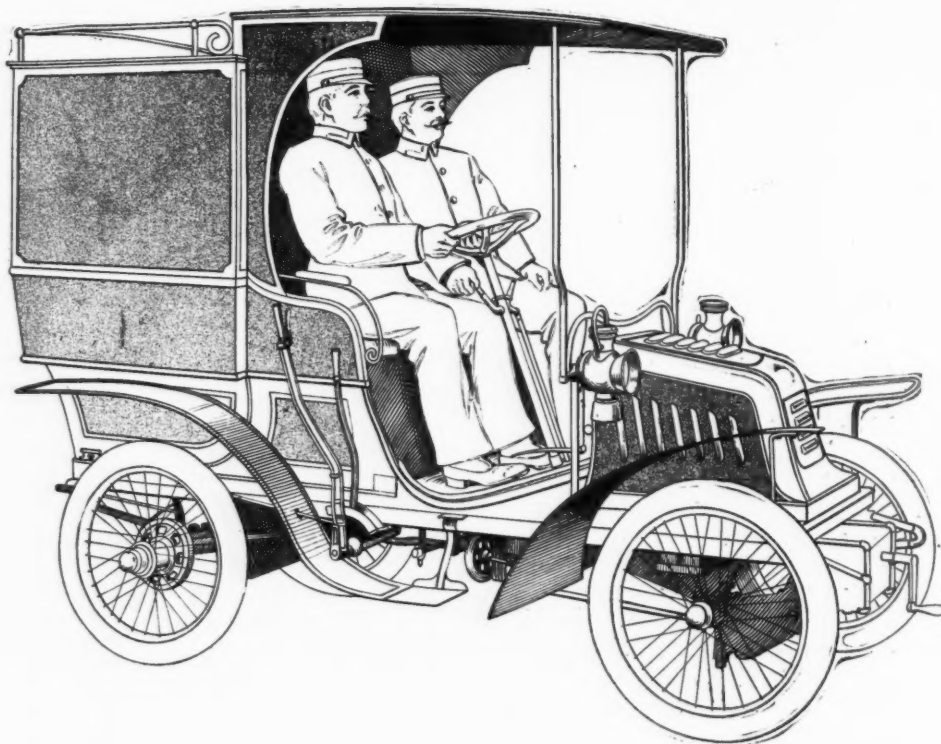
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One of the six different types of delivery vans we manufacture. The type below is in use by the Imperial German and Austrian post-offices. See what the German post-office writes of them:



BERLIN, C. 2, 4th September, 1902.

We certify that the Cudell Motor Vans which have been used by the Imperial post for some time have run excellently and proved a success.

Kaiserliche Oberpost Direction.

(Signed) Hopfner.

6, 8, 12, 16 H. P. Delivery Vans and Trucks. See our price-list.

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Head Office: 28 West 33d Street, New York  
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DOWN-TOWN GARAGE: The Motor Vehicle Repair and Storage Co. Telephone, 2345 Madison Square.  
UP-TOWN GARAGE: C. L. Bell & Co., 250 West 80th Street. Telephone, 2563 River.



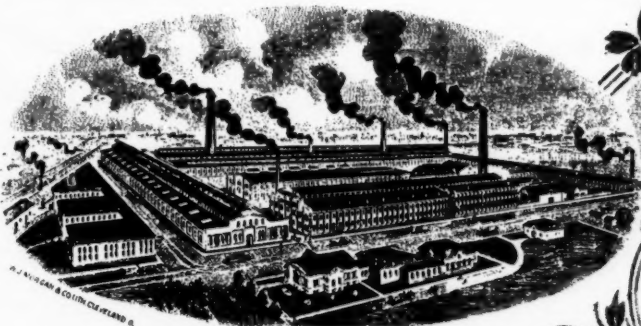
DIRECT EVIDENCE FROM A HIGHLY SATISFIED USER OF

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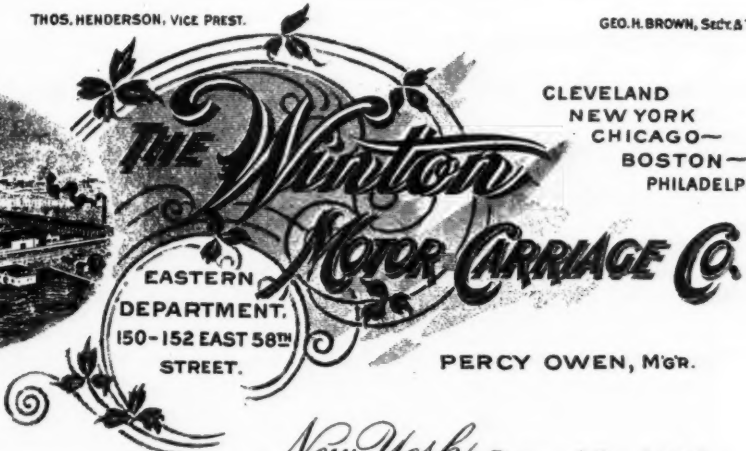
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Gentlemen:-

I beg to advise you that on the recent run to Boston and return, I used your clincher tires size 32 x 4 on the Winton touring car, entered and driven by me. The car weighed about 2260 pounds without passengers, and carried four passengers the entire distance in addition. The tires gave such satisfactory service that I am most happy to write you regarding them. We did not have a puncture all the way, did not touch a pump to them except in two instances where the valve in one of the tubes leaked a very little, and we pumped them up a trifle not from necessity, but for precaution. I have run my car about 12,000 miles this season, and have found that the Goodrich tires were eminently satisfactory on all the runs I have made.

Yours very truly,

*Percy Owen*  
Eastern Manager.

GOODRICH TIRES ARE REGULAR EQUIP-  
MENT ON WINTON MOTOR CARS . . . .

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**The ORIGINAL and "MODEL" TYPES of SINGLE  
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Appreciating the fact that requirements vary as to Single Tube and Detachable Tire Construction, we offer the most reliable of both types—*The Honest Standards.*

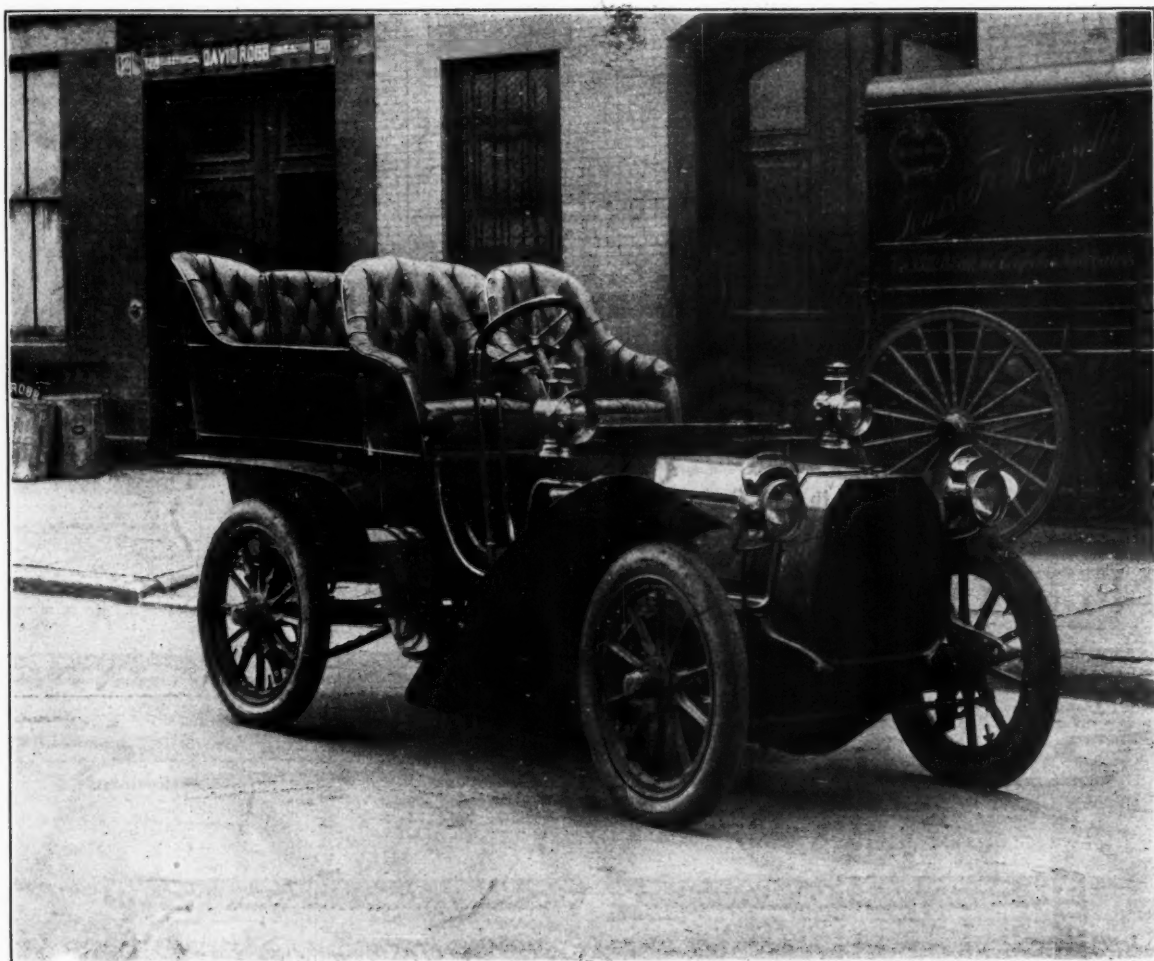
**THEY WERE BEST YEARS AGO, AND YEARS OF INTELLIGENTLY PERSISTENT,  
CAREFULLY DIRECTED EFFORT HAS MADE THEM BETTER TO-DAY.**

Where Quality is desired—where Comfort, Durability, and Protection against Annoyances is wanted—where All-round Satisfaction is demanded—these tires should be adopted. Let us prove this to you by sending you signed statements from some of the most prominent makers and users in this country.

**The Hartford Rubber Works Company, Hartford, Conn.**



## A NEW YORK SHOW FAVORITE



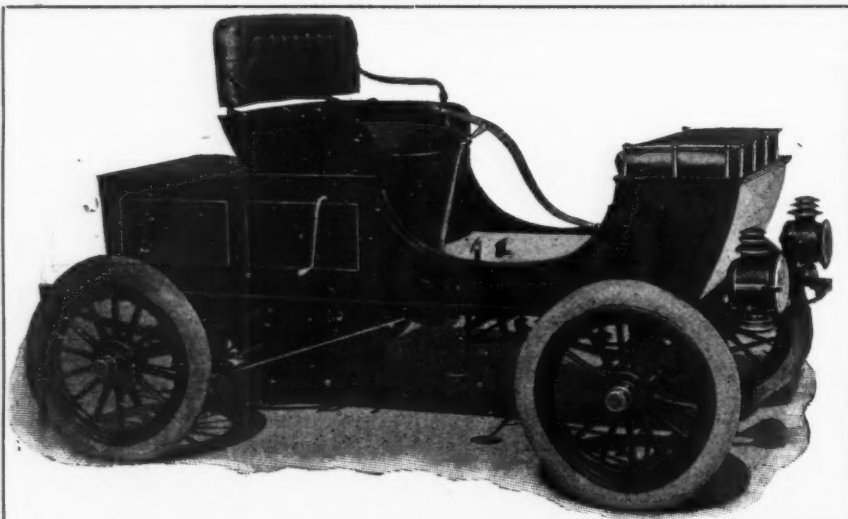
## THE MOYEA TOURING CAR

Met with instantaneous approval from experts and the general public. The powerful motors, beautiful workmanship, and finish, high grade material and simplicity of mechanical design makes the machine the center of interest.

PRICE \$5,000.

Deliveries in early Spring.

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# CENTURY \$750 TOURIST

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Because it has an exclusive design, superior construction, unlimited power (7 h. p. guaranteed), will climb any hill, simple to operate, fuel capacity for 175 miles, with many other new and exclusive features—that's why everybody says it is . . . .

**The Best and Most for the Money Ever Offered in an Automobile**

Built Entirely in Our Own Factories—Parts Not Bought and Assembled  
If Our Catalogue Does Not Convince You—A Demonstration Will

**CENTURY MOTOR VEHICLE CO., SYRACUSE,  
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## Canvassers Wanted!

For Subscription Department  
of MOTOR AGE, in Indiana,  
Michigan and Ohio. Salary,  
commission and good territory  
to good men. Others need  
not apply.

**MOTOR AGE, Monon Bldg., Chicago**



# DARRACQ



12 H. P. KING OF THE BELGIANS BODY

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Noiseless, Perfect Throttle Control, Automatic Lubrication and Luxuriously Appointed. 8, 9, 10, 12 and 20 Horse Power. Weekly Importations Insure Immediate Deliveries. :: SEE OUR BUSINESS DELIVERY WAGONS. ♣

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10 Other  
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All leaders in  
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MODEL 100 SPECIAL

This Vehicle  
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Powerful  
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Runabout on  
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Catalogue upon application.  
Agents wanted in unoccupied territory.

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**National Motor Vehicle Co.**  
1200 E. 22d St.....INDIANAPOLIS, IND.

16  
Horse Power  
4 Cylinders



9  
Horse Power  
2 Cylinders

The 16 H. P. four-cylinder touring car shown above represents the best development in gasoline automobiles up-to-date. IMPROVEMENTS. Throttle control from steering wheel; simplified sliding gear transmission (interlocking); all steel CHASSIS allowing customer to order any desired body; valves removable in minimum time; spark-plugs connected to cables by chains thus preventing snapping of wires. We make both 9 H. P. and 16 H. P. cars and employ the front vertical motor exclusively. Many other advantages. Write for full information.

THE *Locomobile* COMPANY OF AMERICA, 7 East 42nd St., NEW YORK  
BRANCHES: BOSTON, PHILADELPHIA, CHICAGO, BRIDGEPORT, CONN.; LONDON, PARIS.

KELLY BURNERS  
Make Things Hot

## The 1903 Burner

KELLY BURNERS  
Never Back Fire

has been tested on many rigs and NOT ONE has come back.

THERE IS THE

Kelly Burner.

That tube is continuous, of steel. The tube below connects with each coil, giving an even distribution of gas.



That casing has no gauze or holes in the bottom.

Air is taken at ends, preventing under-lapping of flame.

No back-firing even if the burner is red hot.

The generator is clean, quick, simple, strong. No smoke or flaring. No drip cup needed. Encased in aluminum. Wintry blasts have no evil effect. A great and scientific combination.

THE KELLY HANDLE BAR CO.

KELLY BURNERS  
Give Satisfaction

CLEVELAND,  
OHIO.

KELLY BURNERS  
In All Sizes.



5 New  
Steam Models  
for 1903

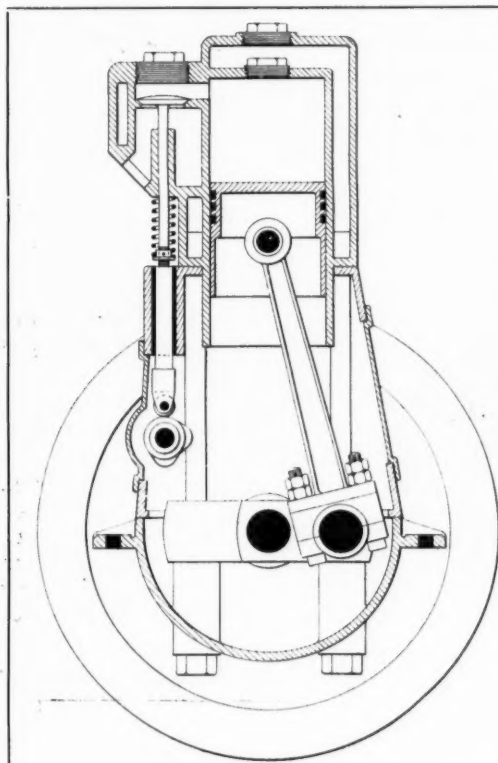


*The Locomobile is the best automobile.*

5 New  
Steam Models  
for 1903

The Locosurrey illustrated above is one of our 1903 steam models. A fine family car for city or country use. IMPROVEMENTS. Steam water and air pumps; Klinger gauge; pilot light; very large water and fuel tanks; superheated steam; enlarged boiler; two sets independent brakes—many other attractive improvements. We are the pioneer builders of steam cars in this country and have placed 5000 Locomobiles in the hands of customers. Our experience, therefore, is unequalled and our cars are the best. Write for new booklets.

THE *Locomobile* COMPANY OF AMERICA, 7 East 42nd St., NEW YORK  
BRANCHES: BOSTON, PHILADELPHIA, CHICAGO, BRIDGEPORT, CONN.; LONDON, PARIS.



8 B. H. P. Gasoline Motor.

## NATIONAL GASOLINE MOTORS

This is the 8 horse power motor that we make. We make two sizes of motors; two and four cylinders of 8 and 16 B. H. P. respectively.

### SOME THINGS WE CAN DO FOR YOU

Quicken your production and enhance the quality, by using our gasoline motors.

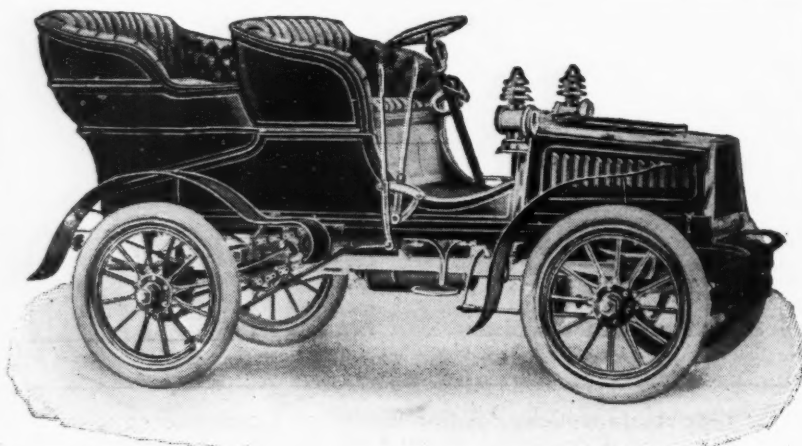
Times have changed and so have methods of doing work. You can save one half the cost of manufacture if you buy our motors.

We can furnish first-class motors thoroughly tested and in working order at short notice.

You take no risk on the quality of our goods as we make only the best. Why buy "just as good," when you can get the best for the same price. LEST YOU FORGET, WRITE TO-DAY.

National Automobile & Motor Co.,  
MILWAUKEE, WISCONSIN.

# An Automobile is only as Strong as its Weakest Part



1903 Model, 4 Cylinder, 24 Brake Horsepower Touring Car. This Car was a feature of both the New York and Chicago Automobile Shows.

CAREFUL engineering in designing, and arduous road tests, have determined to a nicety in the high-quality touring car . . . .

*"Toledo"*

correct proportions for carrying loads and for withstanding vibration due to uneven roads. One part is proportionately as strong as the other. Follow the construction of the . . . .

**"TOLEDO"**

throughout and you cannot help but be impressed that the time spent upon its engine and transmission insures silent, smooth-running carriages of great durability and long life. Pistons, connecting-rods, fly-wheels—in short, all reciprocating parts—are accurately balanced, resulting in a continuous, even motion. . . .

Tell us your requirements and about how much you wish to invest. We will send complete catalogues; interesting automobile literature; gladly answer any questions you wish to propound, and give you the address of our agent nearest you.

**INTERNATIONAL MOTOR CAR CO., 3063 Central Ave., TOLEDO, O.**

"Largest Automobile Factory in the World."

# THE GENERAL

The Modern Runabout



for all Seasons

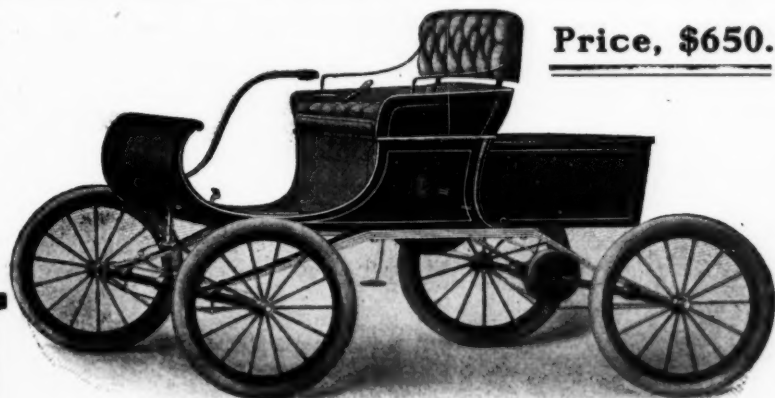
OUR 1903 model represents the ideal American production — the runabout par excellence. Comparison more fully demonstrates its worth — it recommends itself. Comfortable and safe riding, ample power and dependable steering gear. Nothing cheap about The General but the price. Ask us for full information and price. Catalog sent for the asking. . . . .

**The General Automobile & Mfg. Co.**

Cleveland, Ohio.



All Roads Alike to  
**The OLDSMOBILE**



Price, \$650.

The Best Thing on Wheels.

Oldsmobile Co., Glthens Bros. Co., Chicago.  
Oldsmobile Co., Milwaukee, Wis.  
Oldsmobile Co., Cleveland.  
Oldsmobile Company, Los Angeles, Cal.  
Oldsmobile Co., New York City, N. Y.  
Oldsmobile Co., Mohler & DeGress, Mexico  
City, Mexico.  
The Oldsmobile Co., C. C. Moore & Co., San  
Francisco, Cal.  
Olds Gasoline Engine Works, Omaha, Neb.  
The Oldsmobile Co., W. C. Rands Co., Man-  
agers, Detroit, Mich.  
H. B. Shattuck & Son, Boston, Mass.

Agency for Great Britain, The Oldsmobile Company of Great Britain, 100 C Queen Victoria St., London, E. C.

Write for illustrated book to

**OLDS MOTOR WORKS**

1300 Jefferson Avenue,

The Pioneer Runabout of the world and the only machine which can show such a record of use as evidenced by this letter. The Oldsmobile is built to run and does it.

Bought One of the First Oldsmobiles Made.

OLDS MOTOR WORKS,  
DETROIT, MICH.

GENTLEMEN:—Please quote me price on Dos-a-Dos seat for my Oldsmobile. I feel pleased to express satisfaction with my Olds carriage. As you probably remember, I bought the first Olds carriage sold in Detroit. I have just completed a short trip in Canada of about four hundred miles, this being the third trip of the kind in one year, and in that same time my repair bills have not amounted to \$10.00, and my carriage is still in perfect running order. Awaiting your reply in reference to seat, I am  
1462 Fort St. West,  
Detroit, Mich.

Respectfully yours,  
P. DILLON.

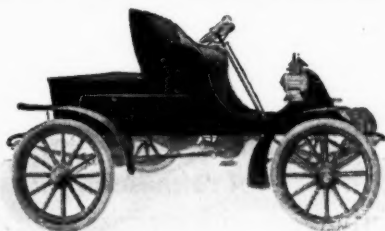
**SELLING AGENTS:**

Banker Bros. Co., Pittsburg, Pa.  
Fisher Automobile Co., Indianapolis, Ind.  
W. C. Jaynes Auto. Co., Buffalo, N. Y.  
F. W. Stockbridge, Paterson, N. J.  
Mississippi Val. Auto. Co., St. Louis, Mo.  
George E. Hannan, Denver, Colo.  
Day Automobile Co., Kansas City, Mo.  
Clark & Hawkins, Houston, Tex.  
Hyslop Bros., Toronto, Ont.  
John W. Chester Co., Nashville, Tenn.  
A. F. Chase & Co., Minneapolis, Minn.  
J. E. Richard, Columbus, S. C.  
Rochester Auto. Co., Rochester, N. Y.

Seager & Close, Tucson, Ariz.  
F. E. Gilbert, Jacksonville, Fla.  
Texas Imp. & Machine Co., Dallas, Tex.  
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Sutcliffe & Co., Louisville, Ky.  
Mason's Carriage Works, Davenport, Ia.  
Adams & Hart, Grand Rapids, Mich.  
Kline Cycle & Auto Co., Harrisburg, Pa.  
F. L. C. Martin Co., Plainfield, N. J.  
Autovehicle Co., Newark, N. J.  
Nat. Capital Automobile Co., Wash., D. C.  
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*You Need It In Your Business*

# The ELMORE AUTOMOBILE



is the most simple, practical and reliable car ever put on the market. It is propelled by the famous Elmore motor, whose two cylinders have fewer parts than a single cylinder of any other type.

Either engine will propel carriage should the other be cut out. (A very important fact.)

Has dynamo and storage battery. Motor will start and carriage will run on either. (Another important fact.)

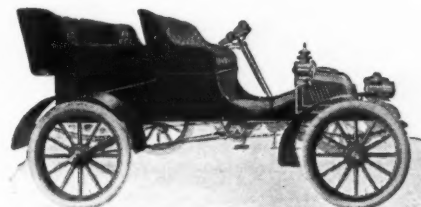
You can charge the battery from the dynamo while running the carriage, which is another important fact.

Has had a practical test of over three years' manufacture.

Two first-class certificates in New York-Boston Endurance Run. Have been used in 1000-mile tours without trouble. And still more important facts.

Doctors' and Business Men's favorite car, Model 7, . . . . \$800

Tonneau Touring Car, Model 8, . . . . \$1400



**.....LOOK UP! WRITE! INVESTIGATE!**

**ELMORE MANUFACTURING COMPANY**

Member of National Association  
of Automobile Manufacturers....

**Clyde, Ohio**

# THE PACKARD

## Absolutely No Repairs

"Please send me your book 'Packard Pointers.' I have had my machine since last March, used 2½ barrels of gasoline and 1 back tire (old one returned from factory good as new), chain adjusted twice, main clutch once, other adjustments none. *Repairs absolutely none.*

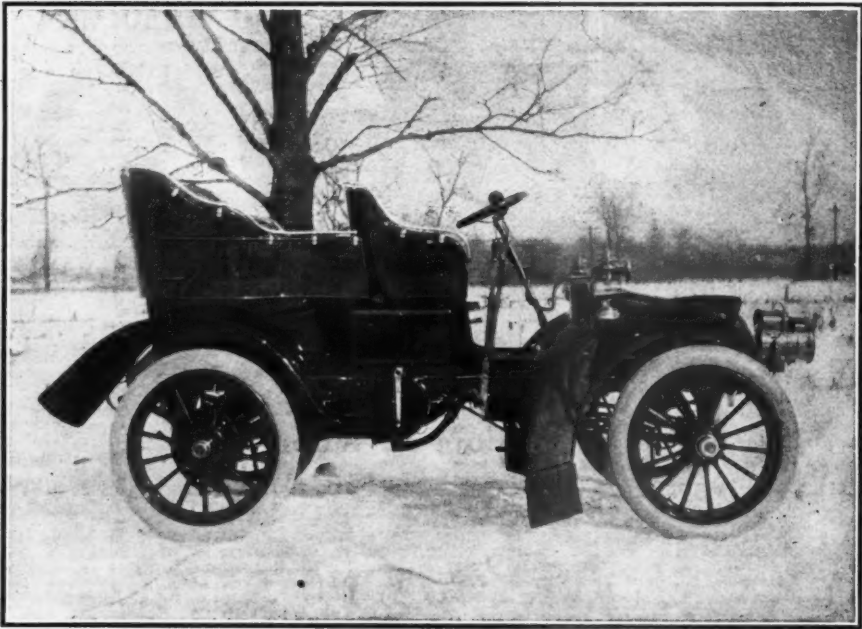
"Only once held up on the road through batteries being exhausted. Put in both sets and got home; delay ten minutes. This is positively the only time we were ever stopped on the road. Running gear not been touched. All nuts have your paint on just as left your factory. We carry four most all the time.

"With compression valve (relief) closed, the engine cannot be turned over, showing the piston and valves still to be perfectly tight. As I have had no trouble I thought I might have your book, as it would seem as if it was needed to find trouble on a Packard.

"My machine shop and 100 men are within five minutes of my house in Warren, R. I., but the auto has never been in the works or been touched by any one except myself."

Another reason for saying

**"Ask the Man Who Owns One"**



**PACKARD MOTOR CAR CO., Warren, O.**

NEW YORK: Eastern Department, 317 W. 59th St.

BOSTON: H. B. Shattuck & Son, 239 Columbus Ave.

PHILADELPHIA: Wm. F. Rudolph, 302 N. Broad St.

CHICAGO: Pardee & Company, 1404 Michigan Boul.

LOS ANGELES: Norman W. Church, 439 S. Main St.

SAN FRANCISCO: H. B. Larzalere, 1814 Market St.

# BAKER ELECTRICS

ARE IN A  
DISTINCTIVE  
CLASSIFICATION



THE STANHOPE

**T**HEY have pleasing lines and serviceable qualities which are approved and endorsed all over the country. Just that air of refinement and just that attractiveness which raises them above the common standard. They have character—are not copies—are copied but not equaled.

Write for our catalogue.

THE BAKER  
REPUTATION  
IS WIDESPREAD

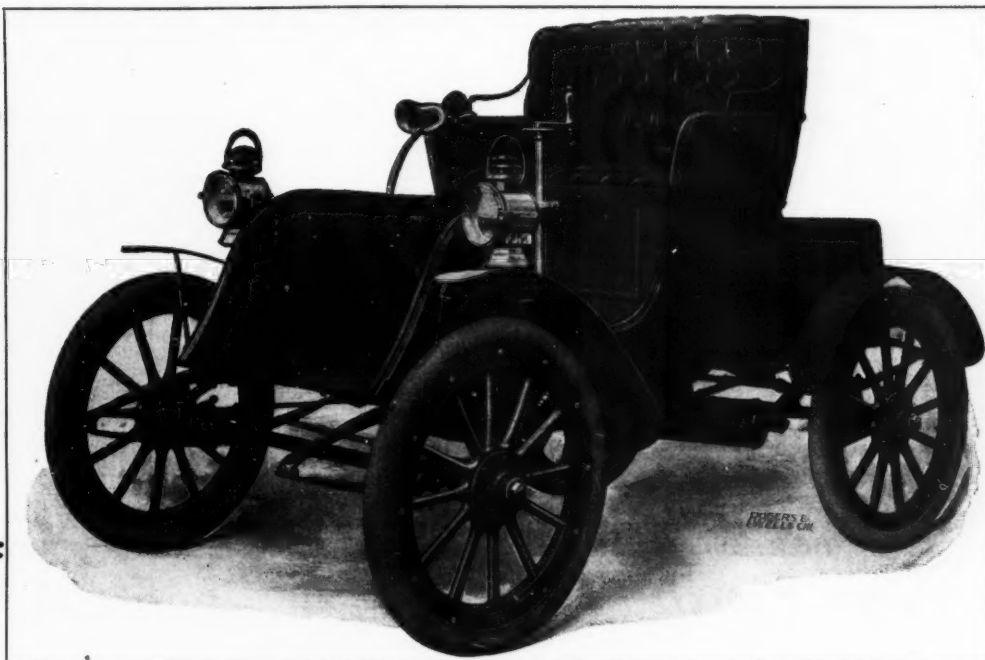
**THE BAKER MOTOR VEHICLE COMPANY**  
CLEVELAND, OHIO, U. S. A.



# TRANSMISSION TROUBLES SOLVED THE UNION

**\$1,200**

Combination  
Two and Four  
Passenger



**\$1,200**

Simple and  
Strong  
Construction

AN INTERESTING PROPOSITION TO DESIRABLE AGENTS

**UNION AUTO CO., Union City, Indiana**

*"The Wheel That's True."*

Just a Mention—That's Enough

**Midgley  
Tubular  
Steel  
Wheels**

Send for Literature About Them.

**The Midgley Mfg. Comp'y**  
COLUMBUS, OHIO, U. S. A.

Western Selling Agent:  
K. FRANKLIN PETERSON, 165 Lake St., Chicago



# Columbia

## Light Electric Runabout

MARK XXXVIII

### One of the Sensations

of the New York and  
Chicago Shows



### Just the Vehicle

hundreds of prospective buyers  
are looking for



PRICE, \$900.00

Lightest Electric Automobile of equal  
mileage ever made. Weight including  
battery 1000 pounds.

Underslung battery and motor leaving  
body space entirely available for lug-  
gage. Low center of gravity gives great  
steadiness and easy riding qualities.

Reachless running gear. Flexible side  
springs.

Three-point body suspension obviating  
all warping and twisting strains on  
rough road surfaces.

Five speeds. Maximum speed fifteen  
miles per hour.

Two brakes. Electrical brake oper-  
ated by controller handle. Mechanical  
brake operated by foot lever.

Foot brake locking device shuts off  
current so that power cannot be applied  
until brake is released.

Catalogue illustrating and describing 20 different  
Columbia Models will be sent on request

**ELECTRIC VEHICLE CO., Hartford, Connecticut**

New York Salesroom: 134, 136, 138 West 39th Street

Boston: 43 Columbus Av. Chicago: 1421 Michigan Av.

# DIAMOND

## DETACHABLE AUTOMOBILE TIRES

### YE MEASURE OF VALUE

NEW YORK SHOW. JANUARY 17-24, 1903.				DETROIT SHOW. FEBRUARY 9-14, 1903.				CLEVELAND SHOW. FEBRUARY 2-9, 1903.				CHICAGO SHOW. FEBRUARY 14-21, 1903.			
Make.	Detach- Single	able.	Tube. Total.	Make.	Detach- Single	able.	Tube. Total.	Make.	Detach- Single	able.	Tube. Total.	Make.	Detach- Single	able.	Tube. Total.
DIAMOND ..	49	22	71	DIAMOND ..	5	6	11	DIAMOND ..	12	7	19	DIAMOND ..	43	34	77
SECOND ...	46	8	54	SECOND ....	5	2	7	SECOND ...	8	1	9	SECOND ...	28	4	32
THIRD ....	29	0	29	THIRD ....	0	7	7	THIRD ....	7	0	7	THIRD ....	23	0	23
FOURTH ...	25	0	25	FOURTH ...	6	0	6	FOURTH ...	7	0	7	FOURTH ...	24	0	24
FIFTH ....	21	0	21	FIFTH ....	6	0	6	FIFTH ....	2	0	2	FIFTH ....	8	0	8
SIXTH ....	1	9	10	SIXTH ....	0	5	5	SIXTH ....	0	1	1	SIXTH ....	0	7	7
SEVENTH ..	0	8	8	SEVENTH ...	0	1	1	SEVENTH ..	0	1	1	SEVENTH ..	0	4	4
EIGHTH ...	0	8	8	EIGHTH ...	0	1	1	MISCEL. ...	0	1	1	EIGHTH ...	3	0	3
NINTH ....	0	5	5	NINTH ....	0	1	1	SOLIDS ....	1	1	1	NINTH ....	0	1	1
TENTH ....	1	0	1	GRAND TOTAL .....	265			GRAND TOTAL .....	48			SOLIDS ....	1	9	9
MISCEL. ...	3	6	9												
SOLIDS ....			24												

Names of Tires represented in above recapitulation will be furnished upon application.

Does this recapitulation of tire equipment upon cars exhibited at the various shows convince you that DIAMOND TIRES are the selection of the builders of Automobiles from the light runabout to the heavy touring car? COMPARE THE CHICAGO RECORD WITH THAT OF NEW YORK—Do you realize what the increased percentage of DIAMOND equipped cars indicates? Is it not indicative of DIAMOND TIRE popularity and an ever increasing demand that can not be ignored? There can be but one reason for this demand—the tire is all that we have claimed for it and has proven itself as such. WHY THEN HESITATE PLACING YOUR ORDER AT ONCE OR SPECIFYING DIAMOND TIRES UPON THE VEHICLE YOU HAVE OR WILL PURCHASE.

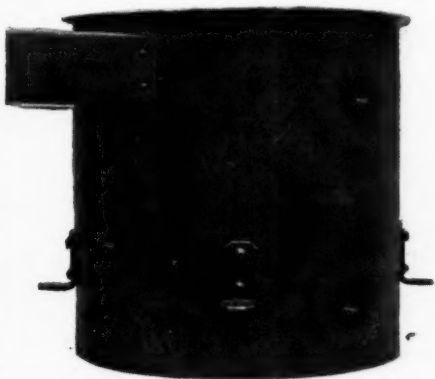
BRANCHES--EAST:  
New York, 1717 Broadway.  
New York, 15 Warren St.  
Boston, 174 Columbus Ave.  
Philadelphia, 435 N. Broad St.  
Buffalo, 41 Court St.

**THE DIAMOND RUBBER COMPANY,**  
AKRON - OHIO

WEST--BRANCHES:  
Detroit, 310 Woodward Ave.  
Cleveland, 323 Huron St.  
Cincinnati, 2103 South St.  
Denver, 1655 Blake St.  
San Francisco, 8 Beale St.

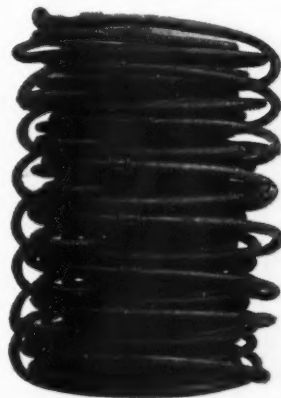


# Simplex Flash Boiler



The Best Boiler  
Ever Invented.

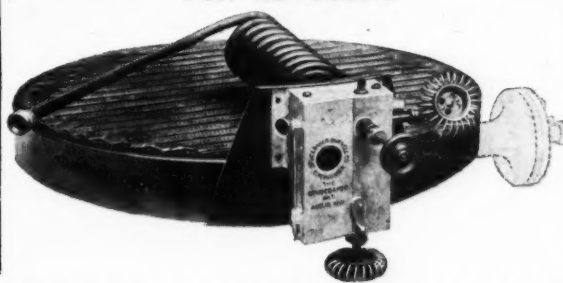
Write for Catalogue  
if you have Boiler  
or Burner trouble.



**THE STUDEBAKER &  
BURNELL**

KEROSENE & GASOLENE  
GENERATORS & BURNERS

FOR KEROSENE



**The BARTON BOILER  
COMPANY,** SOLE  
MANUFACTURERS,

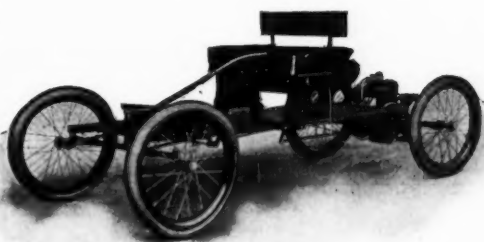
OFFICE AND FACTORY

4212-4230 State St., Chicago,  
U. S. A.

PHONES OAKLAND 1540-1.

## ***Orient Automobiles***

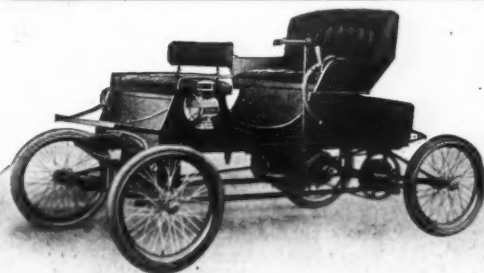
MODELS OF 1903



**ORIENT BUCKBOARD.**

4 H. P. Speed 30 miles per hour. Weight only  
350 lbs. Price, \$500.

The lightest and simplest Automobile in the world.



**ORIENT MOTOR CAR.**

8 H. P. Speed 30 miles per hour. Weight  
1,140 lbs. Price, \$950.

Powerful, practical and durable. Easy to operate.

Now is the Time to Secure the Agency.

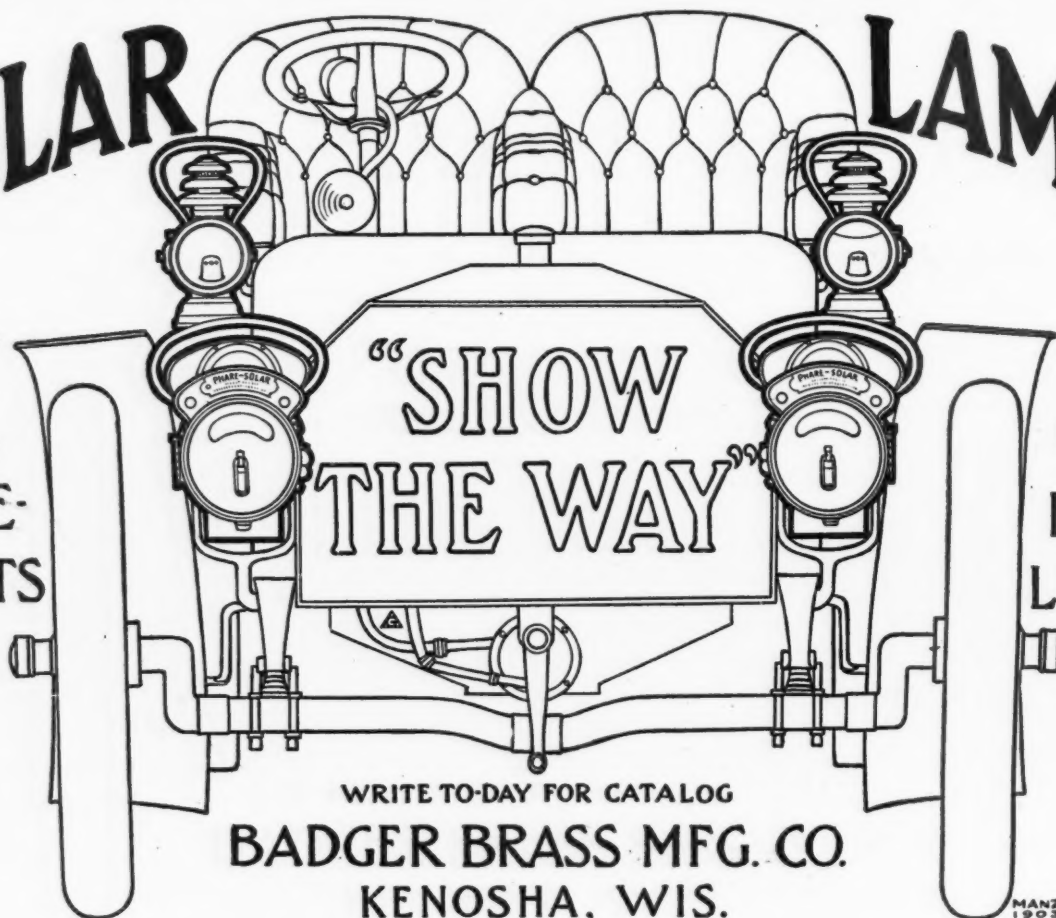
Write for Catalogue.

# Waltham Manufacturing Co.

WALTHAM - MASS.,

# SOLAR LAMPS

OIL  
SIDE-  
LIGHTS



GAS  
HEAD  
LIGHTS

WRITE TO-DAY FOR CATALOG  
**BADGER BRASS MFG. CO.**  
KENOSHA, WIS.

Eastern Branch: 11 Warren Street, New York City, N. Y.

MANZ  
1905



THIS IS TO THE AUTOMOBILE WHAT

## Columbia Auto-Headlight

The Public has had 5 years experience with our system of generation and has unanimously voted it an unqualified success. :: All of our models work upon the same principle. :: The gas pressure and height of flame controlled by gas cock. :: The water feed controlled by the gas pressure. :: Burns out carbide completely. Can use charge repeatedly until exhausted. :: Balanced draught. :: No blowing out or flickering of flame. :: Burns 10 hours without recharging. :: :: Guaranteed.



THIS IS TO THE BICYCLE



**HINE-WATT MFG. COMPANY,**

60 WABASH AVENUE, CHICAGO, ILLINOIS.

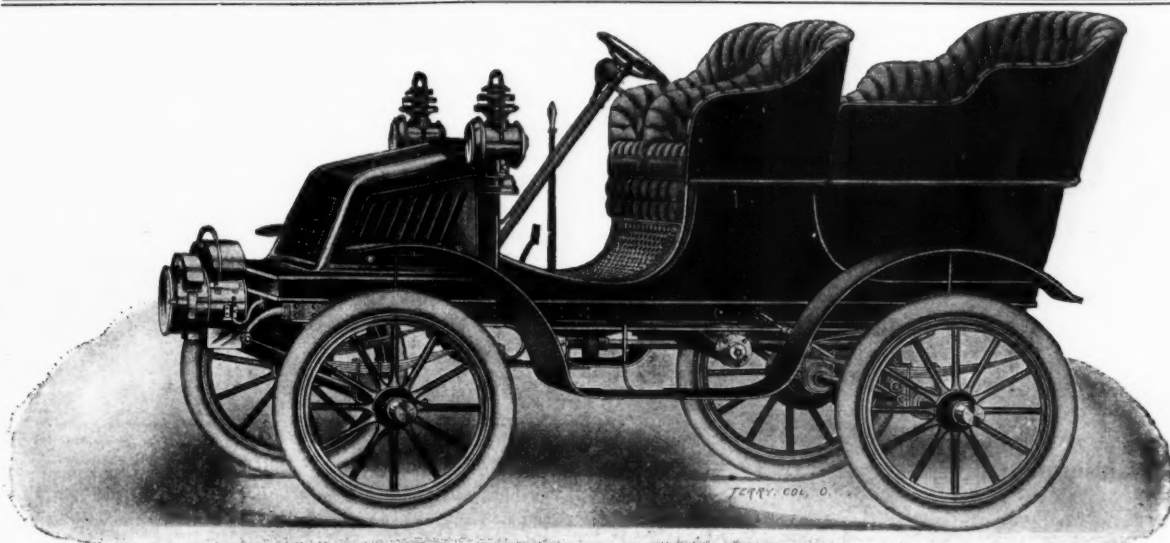


**\$1500**

.... THE ....

**SANTOS-DUMONT**

12 H. P. DOUBLE CYLINDER OPPOSED MOTOR

**\$1500**

⊗  
A Popular Car  
at a  
Popular Price

⊗  
The Hit  
of the  
Chicago  
Show

**WE CAN MAKE EARLY DELIVERIES.**

IF YOU ARE INTERESTED WRITE, AND LET US SUBMIT AN ATTRACTIVE PROPOSITION.

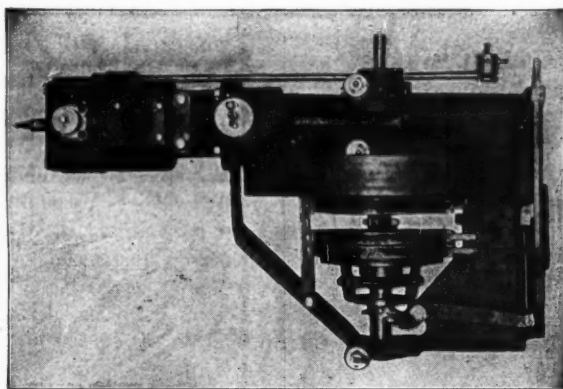
**\$1500****COLUMBUS MOTOR VEHICLE COMPANY,  
COLUMBUS, OHIO.****\$1500****How About Your Runabout?****HAVE YOU AN EFFICIENT MOTOR?**

We have and are anxious to tell you how you can improve your construction. We advocate their use in 1000-lb. vehicles, but they are doing 20 miles per hour in machines that weigh 1250. Transmission providing two speeds, forward and reverse, fitted to shaft, thus making the motor ready to install in the vehicle.



*Come and investigate. It will  
be time and money well spent.*

*The prices are in keeping with  
the quality.*



*If you are looking for cheap  
goods, look elsewhere.*

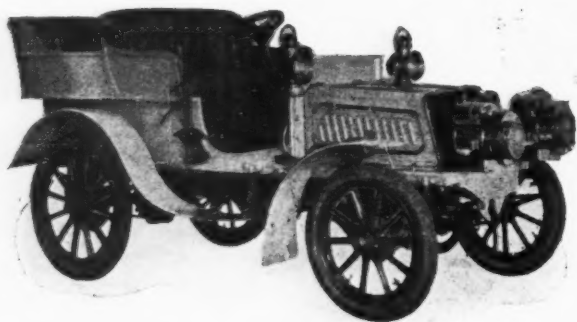
*We try to and do make the  
best motor of its class.*



We provide engines without transmissions if desired. Also Champion transmissions, differential gears, roller bearing axles, chains, sprockets, artillery wheels, tires, etc. Our new catalogue is now being compiled. Send your name and address for one when ready for mailing.

**THE P. J. DASEY CO.,****19 and 21 La Salle St.****Mfgs. Agents.****CHICAGO, U. S. A.**

# DECAUVILLE MOTOR CARS

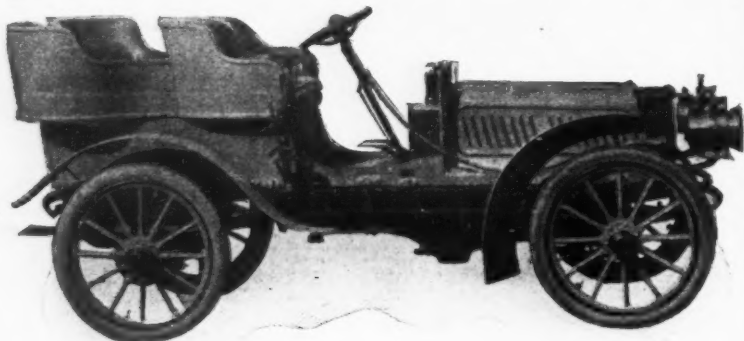


10 H. P. Decauville. Price, \$3,250.

High power for weight is one of the many attractive features, and insures great speed and hill-climbing ability.

**THE ONLY AUTOMOBILE  
THAT EVER TRAVELED  
1,000 MILES WITHOUT A STOP.**  
(Official Record, November, 1900.)

A car with a reputation—not an untried proposition.  
Built more strongly than any American car and  
therefore better for American roads.



20 H. P. Decauville. Price, \$5,500.

We can make Prompt Deliveries if Orders are Placed Early.

We are open to place a few good Agencies,  
Write for Terms, Etc.

SEND FOR EIGHT GREAT DECAUVILLE ACHIEVEMENTS.

## Standard Automobile Co.

Sole United States Agent

136 W. 38th Street, near Broadway  
NEW YORK

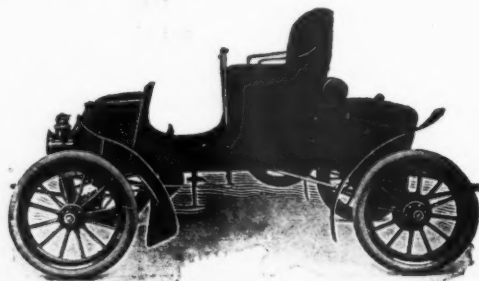
Telephone, 476 38th St.

Cable: Dradnat, N. Y.

# Stop and Think

of the necessary qualifications  
of a good automobile, and you  
will have an accurate descrip-  
tion of the . . . . .

# Rambler



# Touring Car

**RELIABILITY--ACCESSIBILITY  
SIMPLICITY.....**

are its earmarks. You may  
pay more money, but you can-  
not buy a better carriage than  
the RAMBLER for . . . . .

## \$ 7 5 0 . 0 0

Equal in service to the \$2,500  
kind, but at one-third the price.  
Our catalog "C" fully explains  
its merits; shall we send you one?

## Thos. B. Jeffery & Co.

KENOSHA, WISCONSIN



# THOR

and complete set of machined fittings ready for assembling, guaranteed by responsible makers.

Write us. General Salesmen

**BRANDENBURG BROS.  
& ALLIGER,**

85 Lake St., Chicago.  
103 Reade St., New York.



PATENTS PENDING

# MOTORS

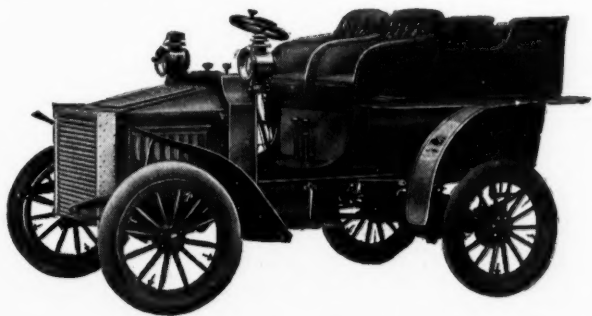
Cycle driven by a chain direct. Highest speeds, greatest power, simplest to operate.

New Catalogue Just Out.

**Aurora  
Automatic  
Machinery Co.**

AURORA, ILL.

## The NEW WHITE STEAM TONNEAU for 1903



### AN AUTOMOBILE THOROUGHbred

The White Steam Motive power has made records in reliability contests, in races, and in every-day use which speak for themselves

Write for full particulars, diagrams of engines, experts' reports and official results of important endurance contests.

### WHITE SEWING MACHINE CO.

(Automobile Dept.)

CLEVELAND, OHIO

22 Union Square, New York, N. Y.  
509 Tremont St., Boston, Mass.  
300 Post St., San Francisco, Cal.  
212 Woodward Ave., Detroit, Mich.

609 Main St., Buffalo, N. Y.  
300 Rose Bldg., Cleveland, O.  
4259 Olive St., St. Louis, Mo.  
1761 Stone St., Denver, Col.

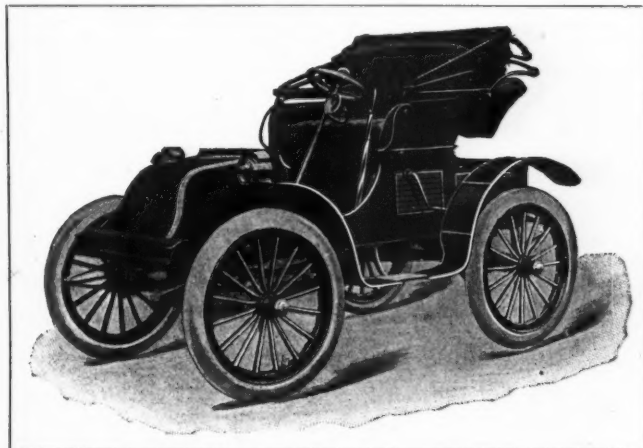
5979 Centre Ave., East End, Pittsburg, Pa.  
BANKERS BROS. CO., 629, 631, 633 N. Broad St., Philadelphia, Pa.  
F. O. BAILEY CARRIAGE CO., Portland, Me.  
WALTER C. WHITE, European Representative, 49 Princes Street, Westminster, London, England.

## LOOK at the Haynes-Apperson Carriage

And Examine the

## New Steering Mechanism

Which is one of the New Features of this well liked Car.



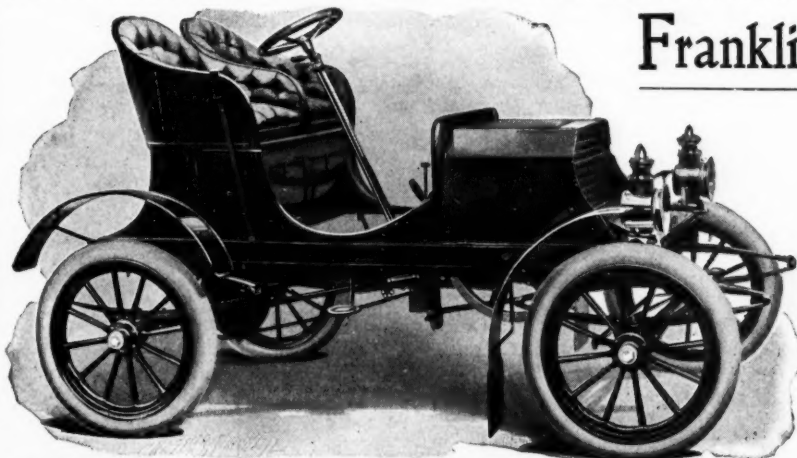
The Haynes-Apperson Carriage has the largest list of first-class road records of any carriage in the United States. Send for booklet and catalog. . . .

## The Haynes-Apperson Company

KOKOMO, - INDIANA.

Agents for Pacific Coast:  
NATIONAL AUTOMOBILE MANUFACTURERS CO.,  
San Francisco.

Chicago Branch:  
L. W. SMELSER,  
Manager,  
381 to 385 Wabash Avenue.



## Franklin Four Cylinder, Air-Cooled

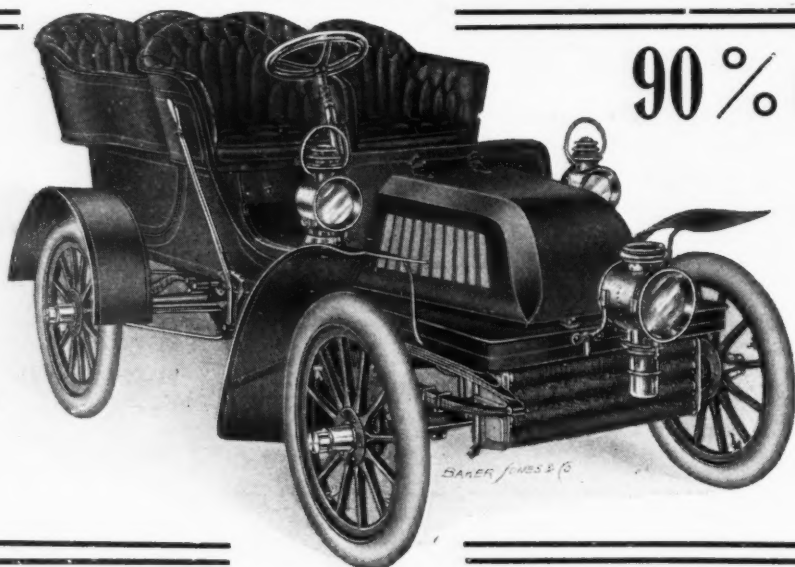
WATER COOLING IS AS USEFUL TO A MOTOR CAR AS A FIFTH WHEEL TO A BABY CARRIAGE.....

The FRANKLIN has aroused a great popular interest in air-cooling. Air-cooling is what every motorist wants. Write us for full information.

Says the Horseless Age under date of February 18, 1903:

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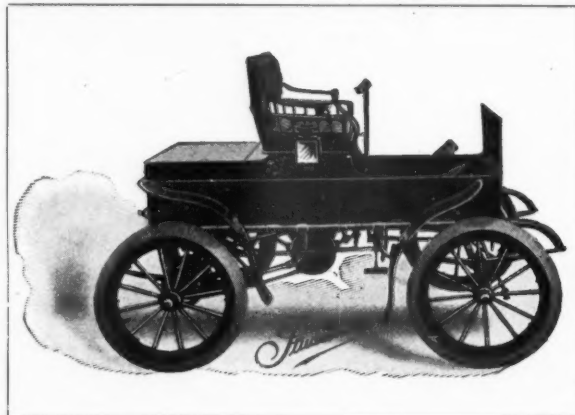
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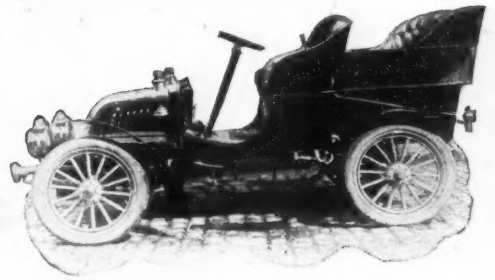


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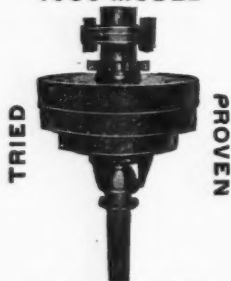
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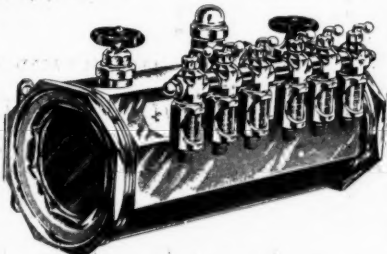
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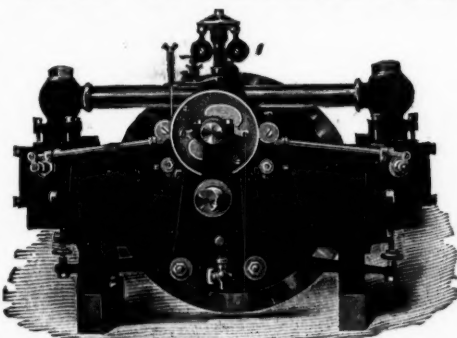
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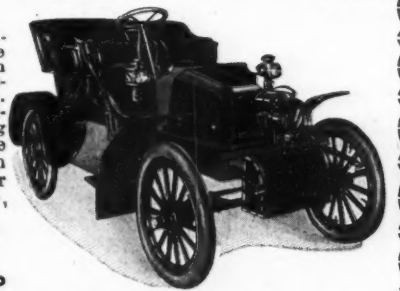
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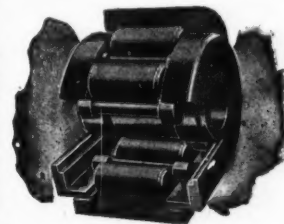
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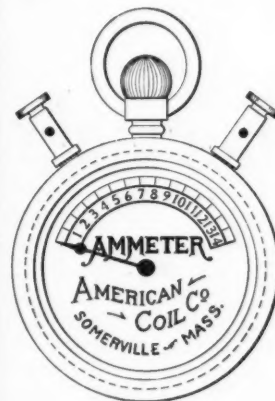
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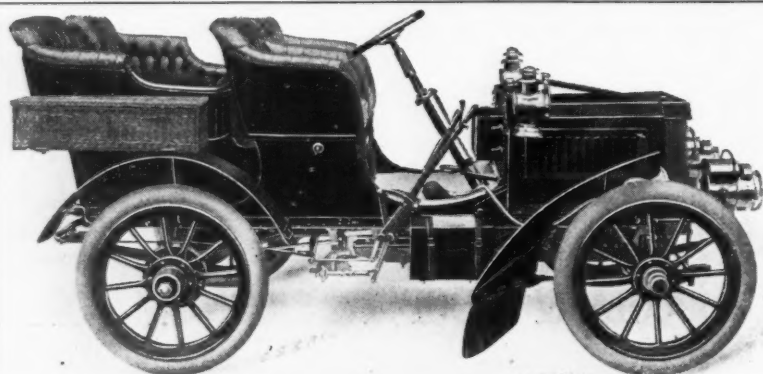
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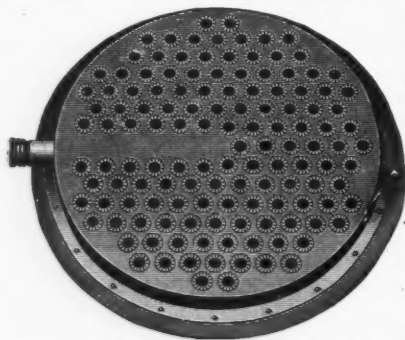
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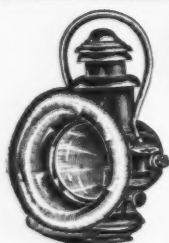
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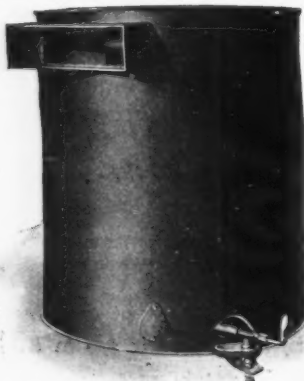
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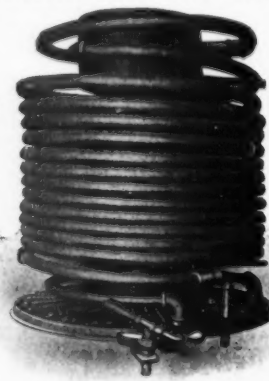
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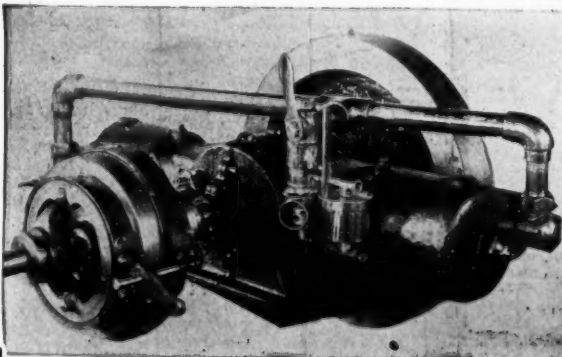
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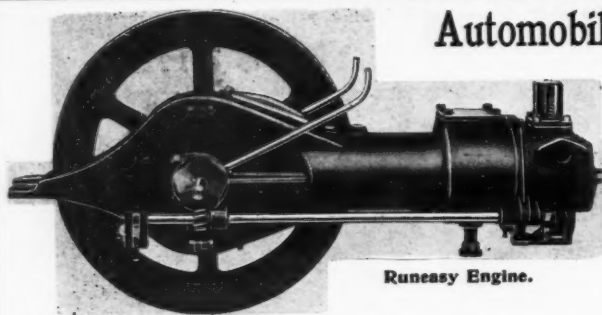
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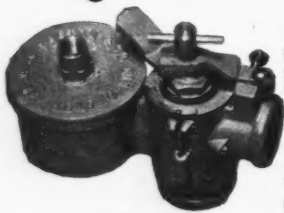
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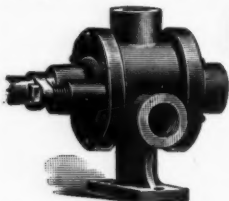
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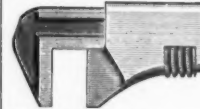
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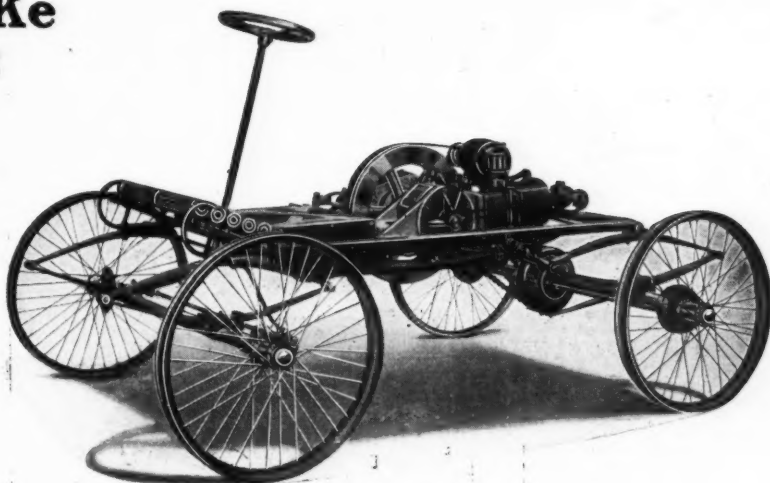
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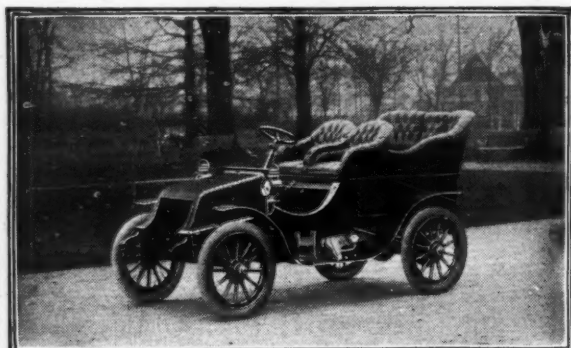
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